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BULLETIN

OF THE

ESSEX INSTITUTE,

VOLUME V.

1873.

BIBLIOTHECA·BODLEIANA

SALEM, MASS.
PRINTED AT THE SALEM PRESS.
1874.

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He should, however, make an exception to the valley of Hasli, in which the striæ on the sides of the mountains are wonderfully distinct.

In Norway also the grooves and striæ may be often seen in protected places, but are scarcely more apparent than about Salem, for example.

He also compared the ice marks and moraines in Wales with those of this country, and alluded to the identical appearance of the marine glacial beds of Sweden with those of northern New England. He thought that the student of this subject need not go outside of the limits of New England for excellent examples of the work done by ancient glaciers.

A general conversation followed on the subjects suggested by the remarks of Dr. Packard, participated in by Messrs. F. W. Putnam, A. C. Goodell, Jr., E. S. Atwood, A. H. Johnson and others; also on the inscriptions on stones, which have been supposed to be Runic, but are probably Indian; and on the visit of the Northmen, which seems to be historically believed, but of which no relics have been found.

The President remarked that, twenty-five years ago this day, a meeting of the Essex County Natural History Society was held to act upon the report of a committee, appointed at a previous meeting, to confer with a similar committee of the Essex Historical Society, on the subject of a union of the two societies. The resolutions reported by the committee and adopted with some slight modifications were the basis of our present organization.

A committee was appointed to petition the Legislature for an act of incorporation, a committee for the same purpose having also been appointed by the Historical Society. The act was duly passed and was accepted by the two societies at meetings held March 1, 1848, and the organization of the Institute immediately followed thereon.

The President presented a brief statement of the organization and condition of the two societies at the time of the union, and made some remarks on the causes that led to this result, and alluded to the various conversations and discussions among the members before any definite action was taken by either society. He suggested the propriety of adopting some measures to commemorate this event.

After a discussion on this subject, a committee consisting of Messrs. A. C. Goodell, A. H. Johnson and E. S. Atwood was appointed to consider and report at an adjournment of this meeting, a plan to commemorate this epoch in the history of the Society.

The Secretary announced the following correspondence:—

From Samuel L. Boardman, Augusta, Maine, Dec. 20; A. J. Cook, Lansing, Michigan, Nov. 15; John T. Moulton, Lynn, Dec. 26; Edward Russell, Boston, Jan. 4; J. Lawrence Smith, Louisville, Kentucky, Dec. 23; New York, Genealogical and Biographical Society, Oct 31; New York Lyceum of Natural History, Dec. 23.

E. A. Goldthwaite of Salem was elected a resident member.

Voted, To adjourn to Saturday evening next at 8 o'clock.

* * *

ADJOURNED MEETING, SATURDAY, JANUARY 11, 1873.

The PRESIDENT in the chair.

Mr. A. C. Goodell reported, for the committee, several plans that had been suggested—after a discussion on motion of Dr. A. H. Johnson.

Voted, That the twenty-fifth anniversary be celebrated by a banquet on Wednesday, the fifth of March, ensuing—at which members can procure tickets for themselves and their friends.

On motion of Mr. D. B. Hagar,

Voted, That a committee be appointed with full powers to make all arrangements.

The committee consists of Henry Wheatland, A. C. Goodell, Jr., William Sutton, F. W. Putnam, D. B. Hagar, A. H. Johnson, John Robinson, James O. Safford, E. C. Bolles, C. Cooke, E. S. Atwood, William Neilson, George D. Phippen, Joshua Coit, and G. M. Whipple.

Adjourned.

* * *

REGULAR MEETING, MONDAY, JANUARY 20, 1873.

THE PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From Jacob Batchelder, Lynn, Jan. 9; E. M. Coffin, Orange, Jan. 8; A. W. Greenleaf, Newburyport, Jan. 7, 9; J. C. Holmes, Detroit, Mich., Jan. 9; M. L.

Huntley, South Lancaster, Mass., Dec. 24; J. Munsell, Albany, N. Y., Jan. 16; C. Fessenden Nichols, Boston, Dec. 27; A. T. Perkins, Boston, Jan. 16; John C. Ropes, Boston, Jan. 11; J. Henry Stickney, Baltimore, Md., Jan. 18; Cyrus Woodman, Cambridge, Jan. 14; Belfast Naturalists' Field Club, Nov. 1; Boston Society of Natural History, Jan. 1; Brooklyn Mercantile Library, Jan.; Bowdoin College, Jan. 13; Hague, Entomological Society of the Netherlands, Oct. 25; Hamburg, Naturwissenschaftlicher Verein, Dec. 10; Lisbon, Academie Royale des Sciences, Sept. 27; Maine Historical Society, Jan. 13; Maryland Historical Society, Jan. 13; New Haven, Yale College, Jan. 9; New York State Library, Jan. 13; Pennsylvania Historical Society, Jan. 16; U. S. Bureau of Education, Jan. 17.

The LIBRARIAN reported the following additions :—

By Donation.

CHAMBERLAIN, JAMES A. Manual for the General Court, 1858, 1 vol. 16mo. The New York State Guide, 1 vol. 16mo. Military Commission to Europe 1855, 1856, 1 vol. 4to. Proposition concerning Protection and Free Trade, 1 vol. 12mo. The Cultivator, 1845, 1 vol. 8vo. Guide through the Middle, Northern and Eastern States, 1847, 1 vol. 16mo. Patent Office Reports, 1854, 1856, 1857, 1858, 4 vols. 8vo. Report on Agriculture, 1862, 1863, 2 vols. 8vo. Salem Directory, 1851, 1 vol. 12mo. Miscellaneous pamphlets, 60.

COLE, Mrs. N. D. Salem Gazette for 1872, 83 Nos.

EDITORS OF "THE NATION," New York. The Benson Family of Newport, R. I. 1 vol. 8vo.

FOOTE, C. Files of several County Papers for 1872. 209 Nos.

FULLER, MISS. Memoirs of Denmark, 1 vol. 12mo. London, 1700. Treason Unmask'd: or the Queen's Title, 1 vol. 12mo. London, 1713.

GARRISON, W. P., of New York. Constitution and By-laws of the New England Society of Orange, N. J., Dec. 1872. 16mo pamphlet.

HAWAIIAN BOARD OF EDUCATION. Ka Huinahelu Hov; via hoi ka Arimatika Kulanui, 1 vol. 8vo. Ka Buke Ao Heluhelu, 1 vol. 8vo. Ka Hoailona Helu, 1 vol.

HOLDEN, N. J. The Commonwealth, 1872. 38 Nos.

NATIONAL ASSOCIATION OF WOOL MANUFACTURES, Bulletin. Oct. Dec., 1872.

NEW ENGLAND TRACT AND MISSIONARY SOCIETY OF SEVENTH-DAY ADVENTISTS AT SOUTH LANCASTER, MASS. United States in Prophecy, 1 vol. 16mo. Battle Creek, Mich., 1872.

NICHOLS, C. F. Webster's Dictionary, 1 vol. 4to. French's Poems, 1 vol. 8vo. Signs of the Times, 1 vol. 4to. Journal of Education, 1 vol. 4to. Chamber's Edinburgh Journal, 1838, 1 vol. 4to. Lessons on the Gospel of St. John, 1 vol. 12mo. Outlines of Phrenology, 1 vol. 12mo. Several pieces of Music.

ROPES, W. L., of Andover, Mass. Catalogue of the Andover Theological Seminary, 1872-3, 8vo pamph.

RUSSELL, EDWARD, of Boston. The Mercantile Agency Reference Book for July, 1871. 1 vol. 4to.

STONE, MISS MARY H. "The Nation." 222 Nos.

U. S. PATENT OFFICE, Washington, D. C. Official Gazette for Dec. 17, 24, 31, 1872.

By Exchange.

BELFAST NATURALISTS' FIELD CLUB. Sixth, Eighth and Ninth Annual Reports, 1868-9, 1870-1, 1871-2. 3 pamphlets, 8vo.

BIBLIOTHÈQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences Physiques et Naturelles, Sept., Oct., Nov., 1872. 3 pamphlets, 8vo.

CANADIAN INSTITUTE OF TORONTO, CANADA. Journal of Science, Literature and History, Dec., 1872. 8vo pamph.

HARVARD COLLEGE LIBRARY. Annual Reports of the President and Treasurer of Harvard College for 1871-2. 8vo pamph.

IOWA STATE HISTORICAL SOCIETY. The Annals of Iowa, Oct., 1872. 8vo pamph.

KONIGLICHE PHYSIKALISH-OKONOMISCHE GESELLSCHAFT IN KONIGSBERG, PRUSSIA. Shriften, 1871-2. 3 pamphlets, 4to.

NATURHISTORISCHEN GESELLSCHAFT ZU NÜRNBERG. Abhandlungen, v Bd., 1872. 8vo pamph.

NATURWISSENSCHAFTLICHEN VEREIN IN HAMBURG. Abhandlungen aus dem Gebiete der Naturwissenschaften. Bd. v, II Abth. Mit 9 Tafeln. 4to pamph. Uebersicht der Aemter-Vertheilung und Wissenschaftlichen Thätigkeit, 1869, 1870. 2 pamphlets, 8vo.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Historical and Genealogical Register and Antiquarian Journal for Jan., 1873. 8vo pamph.

SOCIÉTÉ ENTOMOLOGIQUE DE BELGIQUE, IN BRUXELLES. Annales, Tome xiv, 1870-71, 8vo pamph.

STATE HISTORICAL SOCIETY OF WISCONSIN. Transactions of the Wisconsin Academy of Sciences, Arts and Letters, 1870-2, 8vo pamph.

PUBLISHERS. American Journal of Science. American Naturalist. Bossange's Monthly. Christian World. Dexter Smith's Paper. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Merrimac Valley Visitor. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Observer. Western Lancet.

DR. EMERSON'S EXCURSION TO PHILADELPHIA FIFTY YEARS AGO.

The time at the meeting was chiefly occupied by Rev. E. S. ATWOOD, who read copious extracts from a journal of the late Rev. Brown Emerson, in which was given an account of an excursion which he made to New York and Philadelphia, starting on April 23, 1822, and arriving home again after an absence of four weeks and five days.

The journal contains many interesting incidents of the trip, and quite a full and equally interesting account of the friends and places visited on the way. He left Salem, April 23, in a stage. On Tuesday evening, in Boston, called on Rev. Mr. Wisner and negotiated an exchange. "Called also on J. Peabody and spent most of the evening. He had noticed the publication of my journey in the *Salem Gazette*, which was some mortification to me." On Tuesday night he put up at Earle's Hotel, on Hanover street, and was awakened on Wednesday morning at two o'clock, at which hour he started in the stage on his way to Northampton, where he arrived at night, and the next morning took great pleasure in visiting the house where President Edwards lived when he was settled in the town.

He started from Northampton at eleven o'clock on Thursday, in a stage, arriving at Hartford at eight in the evening. Springfield, he described as "a pleasant town, having the appearance of considerable business and wealth." There seemed to be sudden changes in the weather fifty years ago as well as now ; for while the ride of Wednesday was a very cold one, on Thursday it was a hot summer day, the thermometer indicating 88 degrees, and the cattle panting in the shade. The advent of a minister from a distance seemed to be regarded as quite a distinction on the way, and at Bennett's hotel, on Friday morning, at breakfast, the landlord conducted him to the head of the table, and, calling the attention of the company, requested him to ask a blessing. Dr. Emerson adds: "This was a gratification to me, because it was apparent the company were not accustomed to this religious duty at the breakfast table, *and I was saved from the painful office of calling their attention to it myself;* and because it evinced in the landlord a regard to religious duty and a respect for the ministerial character."

He remained at Hartford, visiting among other things, the Deaf and Dumb Asylum, until the following Tuesday, when, at nine o'clock, A. M., he started for New Haven, where he arrived at four in the afternoon. He remained here until the following Friday, seeing many ministers, visiting Yale college, etc. On Friday, went on board the steamboat which started for New York at a quarter before seven o'clock, P. M. He describes the steamer as a "floating ark, one hundred and forty-six feet long and forty-two broad, and the supper table in the principal cabin as being laid with as much taste and elegance as we find in our best hotels, and furnished with as great and rich a variety." So the palatial steamboat living is not so modern an idea as some of us seem to think. The drawing for berths, by lot, is described, but the following shows that the drawing was not altogether impartial:—

"When my name was called, Capt. B. smiling, said, 'There has been great inquiry about Mr. Emerson, and many of my New Haven friends desired me to give him a good berth.' The captain then drew for me a ticket, which gave me one of the best berths in the boat. I mention this as a proof that, though the berths are assigned by lot, 'the whole disposing thereof' is not directly 'of the Lord,' and as an expression of kind attention to a stranger on the part of some of the citizens of New Haven."

The only other incident of note connected with the trip to New York, was the open announcement at an early hour, which all could hear in their berths, "No fear, we have passed the gate of Hell,"—alluding to the passage at "Hurlgate."

The boat arrived at New York at three o'clock on Saturday morning, and he remained there, seeing the sights, and hearing some of the eminent and other preachers, until the following Friday, when he sailed for New Brunswick, N. J., thirty-five miles distant. There he remained until the succeeding Tuesday, May 14, when he started, by a very slow and dilapidated stage, for Trenton, where he was to take the boat for Philadelphia. The team arrived too late, but it pressed on to Bristol, ten miles below, and there caught the boat, which, at eight o'clock, began to move down the Delaware, the city of Philadelphia coming in sight at half-past ten.

During his stay in Philadelphia, he visited the different localities of interest, and attended some of the sessions of the Presbyterian Assembly. One of the sermons to which he listened was that of Rev. Mr. Howe, of New Brunswick, whom he described as a "noisy, boisterous, declamatory, and dashing preacher."

Dr. Emerson remained in Philadelphia until twelve o'clock on Wednesday, May 22, when he took the steamboat on his way home, by way of Trenton, New Brunswick, New York, New Haven, and New London. He arrived at Boston on Saturday night, May 26th; and, hearing of the severe sickness of his wife, and, finding that an exchange which he had previously arranged, could be provided for, he took a conveyance home early on Sunday morning,—his journal concluding with a warm expression of the abundant reason he had for gratitude to God that his trip had been made with so much pleasure and safety.

In the back part of the book in which this journal was kept, Dr. Emerson gives a minute account of his expenses, and we reproduce the list, as having interest for comparison with present prices:—

Salem to Boston, $1.00; lodging at Earle's hotel, 25 cents; stage, Boston to Framingham, $1.50; breakfast, 50 cents; Framingham to Brookfield, $2.50; Brookfield to Belchertown, $1.31; Belchertown to Northampton, $1.00; supper, breakfast and lodging at Northampton, 75 cents; cake at Suffield, Conn., 6 cents; stage from Northampton to Hartford, $3.00; supper, breakfast and lodging at Bennett's hotel, $1.00; stage from Weathersfield to New Haven, $2.25; dinner at New Haven, 50 cents; shaving in New Haven, twice, 12½ cents; conveyance to steamboat, 25 cents; steamboat fare from New Haven to New York, $5.00; cleaning boots in steamboat, 12½ cents; conveyance of baggage from steamboat 25 cents; breakfast at Bunker's hotel, N. Y., 50 cents; carrying baggage 25 cents; boat and stage fare from N. Y. to Princeton, $2.00; dinner in boat, 75 cents; supper, lodging, and carrying baggage at P., 68 cents; stage, extra, from Princeton to Bristol, Pa., $2.00; steamboat from Bristol to Philadelphia, 50 cents; breakfast on boat, 50 cents; carrying baggage, 25 cents; shaving at N. H., 12 cents; ferry, N. Y. to Brooklyn, 8 cents; four meals and two lodgings at Mrs. Anstris', $2.00; museum, 25 cents; hospital, 12½ cents; porter, 18 cents; boat and stage from Philadelphia to N. Y., $2.50; lodging at N. Brunswick, 25 cents; dinner and breakfast in boat, $1.00; porter 12½ cents; stage from New London to Boston, $7.00; breakfast and dinner, $1.00; stage from Boston to Salem, $1.00. Total expenses, $52.42.

In May, 1837, Dr. Emerson made substantially the same trip with his brother Reuben, and he noted the principal expenses as follows:

Salem to Boston, $1.00; Boston to Providence, $2.00; P. to N. Y. ("found") $5.00; N. Y. to Philadelphia, $3.00; total, $11.00.

Regular Meeting, Monday, February 3, 1873.

Meeting this evening at 7.30 o'clock. The President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence:—

From William Gray Brooks, Boston, Jan. 28; Caroline H. Dall, Boston, Jan. 9; J. H. Emerton, Boston, Jan. 31; Samuel Henshaw, Boston, Jan. 20; Edward P. Hurd, Newburyport, Jan. 26; Wm. Parsons Lunt, Boston, Jan. 28; J. Munsell, Albany, N. Y., Jan. 24; J. L. Sibley, Cambridge, Jan. 22; D. J. Tapley, New York, Jan. 27; W. O. Townsend, New York, Jan. 20; Charles A. Walker, Chelsea, Feb. 3; Boston, Public Library, Jan. 27; Calcutta, Indian Museum, June 4; Harvard College Corporation, Jan. 24; Marburg, Gesellschaft zur Beförderung der Gesammten Naturwissenschaften, Oct 18; Smithsonian Institution, Jan. 17; Yale College, Corporation, Jan. 31; Zurich, die Naturforschende Gesellschaft, July 1.

The LIBRARIAN announced the following additions: —

By Donation.

ATWOOD, E. S. Miscellaneous pamphlets, 85.

BROOKS, Mrs. H. M. Woman's Journal. 1872. 21 numbers.

CHAMBERLAIN, JAMES A., Boston. Board of Trade, 1856, 1867. 14 vols. 8vo. Instruction for Field Artillery. 1 vol. 8vo. Boston Directories for 1861, 1863, 1864. 3 vols. 8vo. Patent Office Reports for 1849–1850, 1850, 1850–1851, 1856. 4 vols. 8vo. New England Business Directory, 1860. 1 vol. 8vo. Boston Almanacs for 1853, 1855. 2 vols. 16mo. The Tax Payer's Manual. 1 vol. 8vo. Miscellaneous pamphlets, 6.

NATURALIST AGENCY. The Great Industries of the United States. 1 vol. 8vo. 1872.

U. S. PATENT OFFICE, WASHINGTON, D. C. Official Gazette. Jan. 7, 1873.

By Exchange.

ENTOMOLOGISCHER VEREIN IN STETTIN. Entomologische Zeitung. Herausgegeben von dem Entomologischen Vereine zu Stettin, xxxiii, Jahrg. 8vo pamph.

GESSELLSCHAFT ZUR BEFÖRDERUNG DER GESAMMTEN NATURWISSENSCHAFTEN IN MARBURG. Shriften, Bd, ix, x. Sitzungs berichte, 1869, 1871.

HISTORICAL SOCIETY OF PENNSYLVANIA. Memoirs of. Vol. x. 1 vol. 8vo. Catalogue of the Paintings, etc., belonging to the Historical Society of Penn. 8vo.

NATURFORSCHENDEN GESELLSCHAFT IN ZÜRICH. Vierteljahrsschrift, Jahrg. xvi. 1871. 8vo pamph. Neuchatel, 1871.

ROYAL SOCIETY OF LONDON. Proceedings of. Vol. xx. Nos. 130–137. 8vo.

SOCIÉTÉ D' ACCLIMATION OF PARIS. Bulletin Mensuel Tome ix, Aout, Sept. Oct., 1872. 3 pamphlets. 8vo.

SOCIÉTÉ DES SCIENCES NATURELLES IN NEUCHATEL. Bulletin, Tome ix. 2me. Cahier. 1872. 8vo pamphlet.

VEREINS FÜR ERDKUNDE ZU DRESDEN. Jahres bericht viii und ix. 1872. 8vo.

PUBLISHERS. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Observer.

The SUPERINTENDENT OF THE MUSEUM announced the following donations to his department:—

STICKNEY, M. A. Miscellaneous manuscripts.

WATERS, E. S., of Chicago, Ill. Water Vase, bought in London, Aug., 1870 stored in the basement of 108 Cass St., Chicago, and dug from its ashes, Nov., 1871.

William Fobes Gavett of Salem, was elected a resident member.

Mr. **James H. Emerton** made an interesting statement of the results of his observations on the

WORMS OF THE GENUS NAIS.

He mentioned that, Oct. 21, he took from the large pond near Legg's hill a quantity of bladderwort and other floating plants, among which, with the animals usually found in the pond, were large numbers of worms of the genus Nais, each wearing a tubular case covered with seeds and water plants and in part with the eggs of Daphnia. On removing the cases, a large proportion of the worms showed the beginning of a division into two and sometimes the struggles of the worm while its case was being removed were enough to complete the separation.

The first appearance of division was a larger interval than usual between two pairs of setæ near the middle of the body, around which a slight wrinkle marked the line of future separation.

Just behind this crease, on the under side of the body, next appeared rudiments of four pairs of bunches of hooked setæ, marking the four segments next behind the mouth of a new worm. At the same time in front of the line of division appeared a great number of new segments crowded together, which were to form the posterior end of the forward worm, and just behind them grew out a pair of long appendages, like those at the end of the old worm. The line of division became more and more distinct, until the appearance was presented of one worm, with another just like it fastened to its tail. At length the division took place, and at the divided part one worm developed a new mouth, and the other a new set of respiratory appendages.

In a few days another worm, Chætogaster, appeared in the water, which divided up in a more complicated way. While one division was going on, and before the parts separated, each half again divided itself, and each of these quarters again divided, and so on, until a chain was formed of a dozen or more unfinished worms, all using the mouth of the foremost one, and having their digestion and circulation in common.

The **President** announced the death of an associate member, Henry C. Perkins, M. D., of Newburyport, who died suddenly at his home on Saturday. In the morning he was taken ill. No special danger was apprehended during the day, though some anxiety was felt; about seven o'clock in the evening, while physicians were in the house and friends were near him, he suddenly closed his eyes upon this world and expired.

Dr. Perkins was the son of Thomas and Elizabeth Perkins, and was born in Newburyport, Nov. 13, 1804. He fitted for college at the Newburyport academy and entered the Freshman class at Harvard in 1820, graduating in 1824. He immediately commenced the study of medicine with Dr. Richard S. Spofford, of Newburyport. In October, 1825, he entered his name as a student with Dr. J. C. Warren, of Boston, and continued with him until he received the medical degree in August, 1827. On the 3rd of September, 1827, he commenced practice in Newburyport, having had a professional life in that place of a little more than forty-five years.

He was well known as a zealous and enthusiastic student in several branches of science. His investigations went out in a great variety of ways. He undertook the grinding and polishing of the lenses for a telescope. He experimented on the qualities of chloroform and ether as anæsthetics. Some fossil bones, brought to this city in a vessel of the late Capt. Cushing and given to him, led him into the study of comparative anatomy. He calculated the orbits of comets; he engraved; made for himself a microscope; was the first in this country to follow Daguerre in his remarkable discovery; was a student of meteorology; and after he was sixty-five years old learned the German language, that he might translate a work of Dr. Ernst Hallier, entitled, "Parasitical Investigations upon the Vegetable Organisms found in Measles, Typhus Abdominalis, Small Pox, Kine Pock, Sheep Pock, Cholera, etc." To this translation the doctor added an appendix, giving his own observations continued for months, confirming those of Professor Hallier. He was scholarly in all his habits, and kept up a familiarity with the classics, but the book of nature was his special delight.

Dr. Perkins was highly esteemed for his scientific and other attainments, and was frequently called to offices of honor and trust. He was for two successive terms President of the Massachusetts Medical Society; a member of the American Academy of Arts and Sciences; President of the Common Council of Newburyport during the years 1858–59, and a representative of that city in the state legislature several times; and during many years previous to his decease a trustee of the Putnam Free School, and trustee of the Institute for Savings for Newburyport and vicinity. He was appointed by Mr. George Peabody, in 1867, one of the trustees for the fund for the Promotion of Science and Useful Knowledge in the County of Essex, since incorporated under the title of "The Trustees of the Peabody Academy of Science," and having its museum and collections in this city.

After remarks from Rev. E. C. Bolles, Dr. A. H. Johnson and Messrs. F. W. Putnam and A. C. Goodell, Jr., on the character of our deceased associate as a scholar, a physician and a citizen, the following resolutions were unanimously adopted :—

Resolved, That the Essex Institute hereby expresses its deep sense of the value of the labors of its late resident member, Dr. HENRY C. PERKINS, in various branches of science; its appreciation of the purity of his life and character; and its sympathy in their loss with the members of his family.

Resolved, That the Secretary be instructed to put these resolutions upon record, and to furnish a copy of the same to the family of the deceased.

A resolve was also adopted, directing the Secretary to invite some friend or friends in Newburyport to prepare a memoir of Dr. Perkins for publication in the "Historical Collections of the Essex Institute."

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REGULAR MEETING, MONDAY, FEBRUARY 17, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From B. F. Browne, Salem, Feb. 5; Jacob Batchelder, Lynn, Feb. 11; Wm. G. Brooks, Boston, Feb. 15; C. H. Dall, Boston, Feb. 5; Henry B. Dawson, Morrisania, N. Y., Feb. 4; Joseph H. Frothingham, New York, Feb. 14; Alfred Osgood, Newburyport, Feb. 11; W. Stevens Perry, Geneva, N. Y., Feb. 7; Edmund F. Slafter, Boston, Feb. 10; Bruxelles, Société Entomologique de Belgique, Jan. 24; Iowa State Historical Society, Feb. 5; New York State Library, Feb. 1.

The LIBRARIAN reported the following additions :—

By Donation.

BUTLER, B. F., of U. S. H. R. Report of the Department of Agriculture for Jan., 1873. 8vo pamph. Alabama Claims, by donor. 8vo pamph.

CUTTER, ABRAM E., of Charlestown. Annual Report of the School Committee of Charlestown for 1872. 8vo pamph.

Holden, N. J. The Commonwealth, 21 numbers. The Literary World, 12 numbers. The National Standard, 7 numbers. Orders of the Day, Senate, Jan. 19, June 21, 1869.

Lee, John C. Commercial Bulletin, Jan. 4, 11, 18, 25, Feb. 1, 1873.

Levette, G. M., of Indianapolis, Ind. Indiana Agricultural Reports for 1872. 1 volume. 8vo. Report of the Superintendent of Public Instruction of Indiana. 1872. 1 vol. 8vo. Geological Survey of Indiana for 1872, by E. T. Cox. 1 vol. 8vo. Maps for the Geological Survey.

Lincoln, Solomon. Industry of Mass. 1865. 1 vol. 8vo. Adjutant General's Report. 1865. 1 vol. 8vo. Report of Board of Education of Mass. 1871. 1 vol. 8vo. Board of Agriculture of Mass., by C. L. Flint. 1868-9. 1 vol. 8vo. Annual Report of the Board of State Charities. 1865, 1868. 2 vols. 8vo. Registration Reports of Mass. 1864, 1866. 2 vols. 8vo. Eighth Census of the United States. 1860. 1 vol. 8vo. Insurance Commissioner's Reports for 1865, 1867. 2 vols. 8vo. Student's Life, by S. Osgood. 1 vol. 12mo. Ciceronis Brutus, by C. Beck. 1 vol. 12mo. Army Regulations. 1861. 1 vol. 12mo. Whitaker's Almanac. 1871-72. The National Almanac. 1863. British Almanac and Companion. 1858. 1 vol. 12mo. Rules and By-laws of Board of Overseers of Harvard College. 1 vol. 12mo. Manual for the General Court. 1864, 1869. 2 vols. 12mo. Statistical Pocket Manual. 1 vol. 16mo. Directory of Cambridge for 1851. 1 vol. 12mo. Boston Almanacs. 1860, 1861. 2 vols. 16mo. Warren's Common School Geography. 1 vol. 4to. Miscellaneous pamphlets, 110.

Massachusetts Horticultural Society. Schedule of Prizes for 1873. 8vo.

Messrs. **Whipple and Smith.** Industry of Massachusetts for 1855. 1 vol.

Moulton, John T., of Lynn. Anniversary Address in Wales, Oct. 5, 1862, by A. Gardner. 8vo pamphlet.

U. S. Department of the Interior. Ninth Census of the U. S. 1870. 1 vol.

U. S. Patent Office, Washington, D. C. Official Gazette, Jan. 21. 1873.

By Exchange.

American Antiquarian Society of Worcester. Proceedings of, at the Annual Meeting, Oct. 21. 1872. 8vo pamphlet.

American Philosophical Society of Phila. Proceedings of, July-Dec. 1872. 8vo pamphlet.

Bowdoin College Library. Catalogue of the Officers and Students of Bowdoin College for 1872. 12mo pamphlet.

New England Historic-Genealogical Society. Address of Hon. M. P. Wilder at the Annual Meeting, Jan. 1, 1873. 8vo pamphlet. Proceedings of the, at the Annual Meeting, Jan. 1, 1873. 8vo pamphlet.

New York Genealogical and Biographical Society. Genealogical and Biographical Record for Jan., 1873. 8vo pamphlet.

New York State Library. Meteorology of New York. 1850-1863. 1 vol. 4to. 1872.

Nova Scotia Institute of Natural Science of Halifax. Proceedings and Transactions, Vol. iii, pts. i, ii. 1870-1872. 2 pamphlets. 8vo.

Publishers. American Journal of Science and Arts. American Naturalist. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Observer. Western Lancet.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., FEB. AND MARCH, 1873. NO. 2.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, FEBRUARY 17, 1873.

[*Continued.*]

Mr. STEPHEN M. ALLEN made a communication on the

ANCIENT AND MODERN THEORIES OF LIGHT, HEAT AND COLOR.

Light, heat and color appeal to our senses from the beginning to the end of life. These phenomena, so closely allied, have for generations appeared alike mysterious to youth and age,—to the simple child of nature and the leaders of scientific research. If any persons have satisfied themselves fully as to the true cause of either, they have transmitted no explanatory theory which has stood the test of time.

The discovery and uses of the spectroscope have for the past five years taken the world by storm, and as a natural consequence there have been greater changes in the theories of light and color than for a century past. The physicists of Europe and America, who employ the spectroscope, claim that by its assistance light and color may be employed to discover the primary elements of luminous bodies, and that by comparing the prismatic effects of sun rays with those of artificial lights, they may identify or discriminate between their causes. This discovery, so confidently announced in 1870, in some respects seemed to confirm the Actien theory which we had the honor to publish some ten years before. The spectroscope would apparently contradict or disprove Sir Isaac Newton's real theory of light; but a careful investigation convinces one that the theory based on the spectroscope is tenable only for our atmosphere, revelations claimed for it outside this, failing in their proof; also, that Newton's theory of the origin of light and its natural properties has been misunderstood and misquoted.

Actien* is a primary principle, the most subtle of all known elements, emanating from the sun in straight lines towards its planets, its flowing rays creating, in their passage to the earth, electricity, magnetism, light, heat, color, and many other properties by their friction upon and combustion with the atmosphere, ultimately reducing all elements to their utmost density, and producing a constant crystallization and consolidation of matter. This creative principle is supposed to pass from the sun, either in all directions through the solar system, or in concentrated rays exclusively upon the planets of its creation, not necessarily bearing light or heat as it passes through space, those elements being generated within the circle of the atmosphere of the planet. When this fluid reaches and pervades the atmosphere, the contact, or friction with it, instantly causes a combustion, producing the magnetic, electric and calorific changes, involving, as a sequence, light, heat and color, the aurora borealis, zodiacal, cometary and phosphorescent lights, as well as the "pole of cold," and many other phenomena. Heat seems of late nearly divorced from light and color, though this is only an apparent separation. The Actien theory materially qualifies the estimate of the nature and origin of all these elements. Late astronomical publications still tell of the heat of the body of the sun, and the hourly consumption of combustible material on its surface necessary for our supply of light and heat. But the present advanced undulatory theory of light promises to qualify such a principle very much.

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* Actien, the primary of Actin, or rays.

The fact of increasing darkness and coldness, experienced by one in rising from the mean surface of the earth, either by climbing mountains or balloon ascension, magnifies the doubt that heat is emitted from the sun in the form received by us; and the result of investigation plausibly shows that we may yet account for the origin of the caloric that we use, in a much more satisfactory and perhaps economical manner.

The advocates of the spectroscopic theory base their belief principally on the undulatory theory of light, which they claim Sir Isaac Newton denied, as well as upon the theory that light is composed of colors, which he did, emphatically, deny; and as the correctness of the spectroscopic theory in a measure depends on this misconception of the real constituents of white light, it seems properly a subject for investigation. Newton's theory of white light, as generally understood, is an emission, or corpuscular theory, and that its rays are a compound of seven different colors, made up of corpuscles; thus contradicting the theory of undulations. But from careful investigations of his original work, which these assumptions render necessary, it will be found that his idea was essentially different from that which has usually been attributed to him, during the past fifty years. It not only disagrees with the spectroscopic theory concerning the taking of prismatic colors as tests of elementary essence, but also qualifies the emission theory, and the theory of color which this is said to represent. It clearly appears that Newton understood and appreciated the undulatory theory as a *transmitting*, if not a *creating* power. Neither he nor his predecessors declared light composed of colors, but called rays of light *color makers*, through prismatic refraction and reflection; colors never appearing until rays were thrown through and were refracted by prisms or lenses, thereby creating the color, according to the angle of refraction, separating the rays unequally and admitting plates of atmosphere between. Various extracts from his well known work on "Optics" distinctly prove that "emission" and "corpuscle" are not used in the sense generally attributed to him, and it does not appear that he contradicted or denied the undulatory theory as a *transmitting* power. He often referred to the condition of the atmosphere or ether of space, as *trembling*, *waving*, etc., so that the rays are transmitted, as sounds are, by waves or undulations; and further, implied that colors may not be created, by any original principle of sun rays other than their mere flexibility or refrangibility. This need not be connected with color as an original principle, though the atmospheric plates, falling between the deflected rays may create color by irregular over and under lappings of shaded lines. It cannot be denied that Newton, though understanding the present undulatory theory, did not credit it with being the *origin*, but only the *vehicle* of light.

Many, since the day of Newton, have worked assiduously in the field of optics and color; prominent among these is Goethe, whose elaborate work was not fully appreciated. His mistakes in quoting Newton come from the inadvertent assumption that color pervades the sun rays *before* the prism, instead of *after* it; the fact being that colors never appear in the primary rays until after having passed through a deflecting lens, which creates the colors beyond it. Hence we judge that an *emanating* theory of light, and a *corpuscular* theory of colors are nearer to Newton's real meaning, than the common interpretation. As his statements show the undulations to be *transmitting* rather than creating powers, he appreciated the distinction between crossing and travelling with the ether waves. The separation, or dispersion of rays by a prism, creates in the atmosphere, according to the angle from whence the ray is thrown, a body to the ray, not before possessed.

Any resultant color is a legitimate consequence of the introduction of a plate of the atmosphere with its molecular composition, between, or overlying, the ray, proving as tangible a result, perhaps, as mixing colored pigments with a white base. We may fairly infer that light has not the same consistency in the space between our atmosphere and the sun, as within the atmosphere itself.

Rays of light probably do not meet exactly the same resistance, at any two given points, in passage to our atmosphere. This we may safely assert, though the atmosphere itself is but imperfectly known to us, even at ten miles distance from the earth's surface. Although the principle of light emanates from the sun, light itself is only a small resultant element, as color may be a resultant of light, not necessarily representing a constituent principle of light itself.

Undulations over or through which rays pass, may be simply confined to the atmosphere near the earth's surface, though assumed to extend much farther into space. The primary principle or power from the sun, would naturally be composed of something more subtle than any single element known to us. Why may not this be the parent of all subordinate elements, as claimed by the Actien theory? This theory does not fix the density or composition of the sun, nor call for the emission of light or caloric, which the old theories demanded; nor is it inconsistent with the great ether-ocean of space (if such a principle exists) through which it may pass, under the same laws which exist for the transmission of magnetic and electric fluids over wires, either by continuous flashes from point to point, or by the displacement of forces, through and over waves of undulation?

This fluid, repellent, yet constructive, adverse to the sun's gravitation, measures precisely the distance and orbits of its creations, and causes their revolutions either axial or orbital at right angles with the line of propulsion.

A ray of light, passing through a small hole in a curtain to a darkened room, when observed from different points, will present different appearances. From a point horizontal with the line of the ray, it presents one appearance, while at right angles the effect is quite different, and the floating particles of dust which can be detected, either by the naked eye or an instrument, will yield different colors, according to the line of their angles, which is constantly changing. The stratification of the atmosphere, or any transparent substance, will show a similar result, when observed on a line with, or at right angles to, the plane of stratification. And the form of crystallization must ever have a great effect upon the polarization of particles.

The cause of the emanation of Actien from the sun may be accounted for on two principles:—the fluid may be the great ultimate or concentrated principle of the sun itself, the resultant product of all action that has or could take place within its body; if so, that principle could not remain at rest on the sun itself, or in its atmosphere, whatever the composition of either may be. It must pass off, giving place to other undeveloped, but constantly increasing, forces, behind. It may be inferred that there are such forces, and that each revolution of the sun lifts them on a stage, and that there is a refined and finished part at least that never returns.

This condensed and sublimated principle may be propelled or thrown off from the body of the sun and its atmosphere against its own, or the gravity of the sun by centrifugal forces, with such power as to reach the remotest planets of its own creation, and produce the results there observable. Or this fluid may escape well defined and specific limits of a solar atmosphere by its own volatility or difference in gravity, entering the unresisting ocean of ether beyond, but seeking a lodgment of its own creation through the origin and growth of planetary worlds. It does not matter to us which explanation we accept. It is enough to know that it does flow from that orb, and that it does answer our purpose.

We suppose that Actien passes in straight lines through space, to our own atmosphere, where the work of change and transformation begins. This theory will also admit of a plutonic origin of the germ of a planet, thrown off as a cinder, from the sun, although it would be without form, and void of atmosphere or water, a mere molten mass or shell, hurled into space as a nucleus for further transformation under the influences of Actien. If such was the origin of the nucleus of planetary worlds, they would be somewhat like the moon, which can have but little atmosphere, and consequently no water to fill the immense cavities observable on its surface, unlike our earth whose caverns have been filled with briny sheets of condensed vapor. When the rays of Actien reach the atmosphere, or any body capable of commencing the process of decomposition, the work begins and increases in measure and action, according to the resistance encountered. Of the elements generated from Actien, we may enumerate electricity, magnetism, light, heat and color, an atmosphere, earth, and all it possesses. Electricity seems to be one of the quickening, disintegrating powers, while magnetism is more concentrative, and belongs to the fixing or consolidating elements. The former takes no rest, but is ever goading all other elements to action and driving them on to their destiny, while the latter seizes the objects of its concentrated labor, holding them fast and crystallizing them in every form that nature demands. Of other existence of these elements, both mechanical and chemical, we have full proof. Mineralogy and chemistry have already enumerated and classified much for us. Geology, vegetable chemistry, and atmospheric changes give us a wide field to work in, and a reliable finger-board is ever pointing us onward. The currents of electricity and magnetism are no doubt governed by fixed laws, which we are getting to understand better and better every day. Their action as a secondary cause (Actien being first) may be considered more important than any other elements we now understand in the creation of worlds, and consolidation of matter. Our planet, like the sun, may also throw off a creating fluid or power, for the formation of planets of its own. The moon appears like a cinder, ragged and cavernous, around which but little atmosphere exists, and consequently with no water or vegetable life. These may be forming—approaching through time to a perfect habitation, peopled and cultivated—a child of earth and one of the gems of infinity.

Regular Meeting, Monday, March 3, 1873.

Meeting this evening at 7 30 o'clock. The President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence:—

From Francis H. Appleton, Boston, Feb. 17; Geo. Cogswell, Bradford, Feb. 20; C. H. Dall, Boston, Feb. 19, 21; A. W. Morgan, New York, Feb. 17; Wm. S. Peabody, Boston, Feb. 17; Jonathan Pearson, Schenectady, N. Y., Feb. 26; S. J. Spaulding, Newburyport, Mch. 3; E. Steiger, New York, Feb. 25; Danzig, Die Naturforschende Gesellschaft, Oct. 4; Genèvè, Société de Physique et d' Histoire Naturelle, Nov. 1; Lyon, Société d' Agriculture, d' Histoire Naturelle, et des Artes Utiles, Dec. 20; New York Genealogical and Biographical Society, Feb. 18; Munchen, K. Bayerischen Akademie der Wissenschaften, Dec. 1.

Mr. John Robinson spoke of the death of Mr. Abram F. Bosson, which occurred on the 21st ult., at his residence in Salem, by which the society loses one of the most prominent exhibitors of flowers at the horticultural exhibitions. Mr. Bosson's particular favorites were the dahlias and gladiolus; his stands of the former at the exhibitions ten or twelve years since were of the most gorgeous description. Of late years he has cultivated the gladiolus most extensively, the endless variety and profusion of which at the last series of exhibitions held by the Institute caused much comment, and gave great pleasure to the many visitors. After some other remarks the following resolutions were presented and unanimously adopted:—

Whereas, The Essex Institute, by the death of Abram F. Bosson, loses an esteemed member and officer, therefore be it

Resolved, That the Institute recognizes the value of the services of the deceased as a promoter of its objects, particularly in the department of horticulture, in which centred his entire interest. His large contributions to the exhibitions increased the usefulness of this department of the Institute, and thereby enabled the public to enjoy the beautiful flowers which he cultivated with so much care and well founded pride.

Resolved, That the members of the Institute, deeply regretting their loss, desire to express their sympathy to the family and friends of the deceased, and request that a copy of these resolutions be transmitted to them, and be entered upon the records.

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Regular Meeting, Monday, March 17, 1873.

Meeting this evening at 7 30 o'clock. The President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence:—

From Jacob Batchelder, Lynn, Mch. 1; William Cogswell, Salem, Mch. 17; Samuel G. Drake, Boston, Mch. 6; Samuel A. Drake, Boston, Mch. 14; J. N. Emery, Beverly, Mch. 11; Gurdon Saltonstall, Boston, Mch. 10; E. Steiten, New York, Mch. 8, 10; M. P. Wilder, Boston, Mch. 6; Buffalo Historical Society, Mch. 13; Gottingen, Die K. Gesellschaft der Wissenschaften, Mar. 1; Rhode Island Historical Society, Mch. 13.

The Librarian reported the following additions:—

By Donation.

Board of Public Charities of Penn. Third Annual Report of, 1872. 1 vol. 8vo. Harrisburg, 1873.

Buswell, E. W., of Boston. Miscellaneous pamphlets, 50.

Butler, B. F., of U. S. House of Rep. Speech in U. S. House of Rep., Feb. 14, 15, 1873. 8vo pamph.

Foote, Rev. Henry W., of Boston. Discourse given in King's Chapel, Boston, Dec. 24, 1871, by donor. 8vo pamph.

Girard, Dr. Chas., of Paris. Principes de Biologie a la Mèdicino, by donor. 32mo pamph.

Hale, Chas. R., of Auburn, N. Y. Miscellaneous pamphlets, 3.

James, Thos. P. Journal of a Botanical Excursion, by F. Pursh. 12mo pamph. Phila. 1869.

Lee, John C. Commercial Bulletin for Feb. 8, 15, 22, Mch. 1, 8, 1873.

Putnam, F. W. Miscellaneous pamphlets, 28.

Smith, N., of Pembroke. Annual Report of the School Committee of the Town of Pembroke. 1872-3. 8vo pamph.

Stephens, W. H., of Lowville, N. Y. Miscellaneous Catalogues, 15.

Stone, E. M., of Providence, R. I. Thirty-first Annual Report of the Ministry at Large, Feb. 3, 1873. 8vo pamph.

Sumner, Chas., of U. S. S. Reports in the Senate of U. S. 3d Sess., 42d Cong., Feb. 20, 1873. 8vo pamph.

U. S. Patent Office, Washington, D. C. Official Gazette, Jan. 28, Feb. 4, 11, 1873.

Vassar, Rev. T. E., of Lynn, Mass. Address at the Funeral Services of James M. Nye, M. D., by donor. 8vo pamph. 1872.

Wilder, M. P., Boston. Lecture on the Hybridization of Plants, by donor. 8vo pamph. 1872. California, by donor. 8vo pamph.

By Exchange.

Academie Impériale des Sciences, Belles-Lettres et Arts, de Lyon. Memoires, Classe des Sciences. Tome xviii, 1870-71. 8vo pamph.

Institut National Genevois in Genevé. Bulletin, No. 36, Vol. xvii, pp. 1-216. 12mo pamph.

Königlich Bayerischen Akademie der Wissenchaften, zu München. Sitzungsberichte d. philos., Classe 1871, Heft 4-6, 1872, Heft 1-3. Sitzungsberichte, d. Math., Classe 1871, Heft 3, 1872. Inhaltsverzeichniss, zu 1860-1870. 8vo pamph.

Minnesota Historical Society. Collections. Vol. i. 1850-56. 1 vol. 8vo.

Naturforschende Gesellschaft in Danzig. Shriften, Neue Folge. Band iii, Heft 1, 1872. 8vo pamph.

New Jersey Historical Society. Proceedings. Vol. iii, 2d Series, 1873. No. ii.

Senckenbergische Naturforschende Gesellschaft, zu Frankfort á M. Bericht, 1871-72. 8vo pamph.

Société d' Acclimatation zu Paris. Bulletin Mensuel, Tome ix, 2 me Série, No. 11, 1872. 8vo pamph.

Société d' Agriculturé d' Histoire Naturelle et des Arts Utiles in Lyons. Annales, 4th Series, II Tome, 1869. 8vo pamph.

Société d' Agriculture, Sciences et Arts de la Sarthe zu Le Mans. Bulletin, Tome xiii, 1871-72. 2 pamphlets. 8vo.

Société d' Anthropologie in Paris. Bulletins, Tome vi, Nov., Dec., 1871. Tome xvii, Jan.-Apr., 1872. 4 pamphlets. 8vo.

Société de Physique et d' Histoire Naturelle in Genève. Mèmoires, Tome xxii, 2d pt., 1872. 4to pamph.

Société Linneene de Lyon. Annales, Années, 1870-71. (Nouvelle Séries.) Tome xviii. 8vo pamph.

Verein fur Naturkunde in Wiesbaden. Jahrbücher, Jahrg, xxv, xxvi, 1871-72. 8vo pamph.

Publishers. American Journal of Science. American Naturalist. Francis's Catalogue. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Observer.

The following paper was received from Mr. **Harold Herrick** of New York:—

A PARTIAL CATALOGUE OF THE BIRDS OF GRAND MENAN, N. B.

Grand Menan, the point at which these notes were made, being situated at the mouth of the Bay of Fundy, about ten miles from the coasts of Maine and New Brunswick and twice that distance from Nova Scotia, possesses one of the most interesting faunæ of the Atlantic coast, forming, as it were, a neutral ground upon which stragglers from our southern districts mingle with those of more Arctic birth, and unite to form a local fauna of considerable extent and great interest.

The island is about twenty miles long by five wide. On its western side, for about twelve miles, the surface slopes gently to the shore and is well settled, but all the rest of the coast from the "Southern Head" to the "Swallow-tail Light," is one continuous line of precipitous cliffs, rising perpendicularly to the height of from two to six hundred feet, and broken only by an occasional swale through which pours some miniature torrent. The interior is composed of dense forests of spruce and pine, alternating with alder swamps and heaths of Labrador Tea, the latter the chosen abiding place of thousands ot *Lepus Americanus*.

Lying off from Grand Menan are numerous small islands, where the sea-birds breed and have bred, to some considerable extent, since the memory of man. Among the chief of these islands are:—Green, White-horse, Ross, Two, Three and Whitehead islands. But these beloved nesting-places are being gradually broken up, and the persecuted birds are either retiring farther north, or are betaking themselves to the inaccessible cliffs where they cannot be molested.

Audubon was the first student of nature who ever explored the wild and rocky shores of Menan, and he, it seems, not very thoroughly. I believe no catalogue of its local birds has ever been published. Mr. G. A. Boardman's list of "Birds of Calais and Islands in the Mouth of the Bay of Fundy," gives many species that are to be found at Calais, though a number of them never occur on Menan.

The following catalogue and annotations are the result of two visits to the island, one in May, 1871, the other during June, July and August, 1872. I must in this connection acknowledge my indebtedness to Mr. S. F. Cheney, of Grand Menan, for his universal kindness and for the great aid he tendered me, in procuring many valuable specimens; also for much useful information. I cannot but recommend him to all who may contemplate a visit to the island, either for recreation or study, as one who will give all the assistance in his power, and make their stay as enjoyable as possible.

TURDIDÆ.

1. *Turdus migratorius.* Robin. Very common and breeds abundantly, nesting about June 5.

2. *Turdus Pallasii.* Hermit Thrush or Cathedral Bird. It is common and breeds. The song of this species, as well as that of the succeeding, is here very full and strong.

3. *Turdus Swainsonii.* Olive-backed Thrush. Quite common; breeds. I was fortunate enough to secure a fine nest and complement of three eggs, June 21. *T. fuscescens* very possibly occurs, but was not noted.

SAXICOLIDÆ.

4. *Sialia sialis.* Bluebird. Rare. I took none, but saw the remains of a specimen that had been shot July 20. This must be its eastern limit, as it is as rare on the main shore as here.

PARIDÆ.

5. *Parus atricapillus.* Chickadee. Very common. Breeds abundantly.

6. *Parus Hudsonius.* Hudsonian Titmouse. Not very common; only two were noted. It probably breeds in the dense forests. The only specimen captured was among a large flock of *P. atricapillus*, and was first noticed from its exceedingly loud note, which is much harsher, shriller and more quickly given than *P. atricapillus.*

SITTIDÆ.

7. *Sitta Canadensis.* Red-bellied Nuthatch. Common; breeds.

8. *Sitta Carolinensis.* White-bellied Nuthatch. Rare.

CERTHIIDÆ.

9. *Certhia familiaris.* Brown Creeper. Not common; breeds.

TROGLODYTIDÆ.

10. *Troglodytes hyemalis.* Winter Wren. Common; breeds. Its superb song is here heard to the utmost advantage, in the solitudes of its native forests and in the tangled and almost impenetrable swamps. *Troglodytes œdon* may occur.

MOTACILLIDÆ.

11. *Anthus Ludovicianus.* Titlark. Occurs in spring and fall, but does not breed.

SYLVIIDÆ.

12. *Regulus calendulus.* Ruby-crowned Wren. Common in spring and fall, but passes to the north to breed.

13. *Regulus satrapa.* Golden-crowned Wren. Common; breeds. I was unable to discover any nests, although I could see, by the actions of the parents, that they had young near by.

SYLVICOLIDÆ.

14. *Mniotilta varia.* Black and White Creeper. Rather uncommon; breeds.

15. *Parula Americana.* Blue Yellow-back. Rare. I took a single specimen in May.

16. *Geothlypsis trichas.* Maryland Yellow-throat. Exceedingly common. Breeds in abundance in all the heaths of Labrador Tea. A nest taken June 20 was composed largely of feathers of *Larus argentatus.*

17. *Helminthophaga ruficapilla.* Nashville Warbler. Common; breeds.

18. *Helminthophaga peregrina.* Tennessee Warbler. Not rare; breeds.

19. *Dendrœca virens.* Black-throated Green Warbler. Common; breeds, frequenting the thick spruces.

20. *Dendrœca Canadensis.* Black-throated Blue Warbler. Rare; may breed.

21. *Dendrœca Pennsylvanica.* Chestnut-sided Warbler. Rare.

22. *Dendrœca coronata.* Yellow rump Warbler. Very common; breeds.

23. *Dendrœca Blackburniæ.* Blackburnian Warbler. Rare; may breed.

24. *Dendrœca striata.* Black Poll. The most common warbler; breeds everywhere, but I was not fortunate enough to take a nest.

25. *Dendrœca castanea.* Bay-breasted Warbler. Rare; may breed.

26. *Dendrœca æstiva.* Yellow Warbler. Rare. I took but three birds and one nest.

27. *Dendrœca maculosa.* Magnolia Warbler. Common. On June 27th I took a nest containing four fresh eggs, with advanced embryos. It was in a small spruce, not more than two feet from the ground, on the edge of a heath, and was very slightly built.

28. *Dendrœca palmarum.* Yellow Red-poll. Not common, and does not breed.

29. *Dendrœca tigrina.* Cape May Warbler. Rare; may breed.

30. *Sciurus aurocapillus.* Golden-crowned Thrush. Quite rare; probably breeds. I took but one. *S. Noveboracensis* may occur.

31. *Myiodioctes pusillus.* Green Black-capped Flycatcher. Rare. I do not think it breeds.

32. *Myiodioctes Canadensis.* Canada Flycatcher. Rare; may breed.

33. *Setophaga ruticilla.* Redstart. Very common; breeds.

HIRUNDINIDÆ.

34. *Hirundo horreorum.* Barn Swallow. Common; breeds.

35. *Hirundo lunifrons.* Eave Swallow. Common; breeds.

36. *Hirundo bicolor.* White-bellied Swallow. Common; breeds.

37. *Cotyle riparia.* Bank Swallow. Common; breeds.

38. *Progne subis.* Purple Martin. Rare on Menan but very common on the Maine coast.

VIREONIDÆ.

39. *Vireo olivaceus.* Red-eyed Vireo. Rare; may breed.

AMPELIDÆ.

40. *Ampelis cedrorum.* Cedar Bird. Very common summer resident.

LANIDÆ.

41. *Collurio borealis.* Great Northern Shrike. Common in winter, but does not breed.

FRINGILLIDÆ.

42. *Pinicola Canadensis.* Pine Grosbeak. Not rare in winter.

43. *Carpodacus purpureus.* Purple Finch. Common.

44. *Chrysomitris tristis.* Goldfinch. Common during July and August, but does not breed. The flocks appeared to be passing to and fro between Maine and Nova Scotia.

45. *Chrysomitris pinus.* Pine Finch. Rather uncommon; may breed.

46. *Curvirostra Americana.* Red Crossbill. Not rare; probably breeds in the thick woods. I took it in August.

47. *Curvirostra leucoptera.* White-winged Crossbill. Not rare in winter.

48. *Ægiothus linarius.* Redpoll. Common in winter.

49. *Plectrophanes nivalis.* Snow Bunting. Common in winter.

50. *Plectrophanes Lapponicus.* Lapland Longspur. Occurs in winter.

51. *Passerculus savanna.* Savannah Sparrow. Breeds everywhere. I took numerous nests.

52. *Zonotrichia albicollis.* White-throated Sparrow. Common; breeds plentifully.

53. *Zonotrichia leucophrys.* White-crowned Sparrow. Occurs during migrations.

54. *Junco hyemalis.* Black Snowbird. Very common; breeds everywhere.

55. *Spizella monticola.* Tree Sparrow. Occurs in autumn.

56. *Melospiza melodia.* Song Sparrow. Rather uncommon. I took but one nest and three or four birds.

57. *Melospiza palustris.* Swamp Sparrow. Not rare; breeds.

58. *Passerella iliaca.* Fox Sparrow. Occurs during migrations, but does not breed.

59. *Guiraca Ludoviciana.* Rose-breasted Grosbeak. Very rare. I took a fine ♂ May 16, but saw no more. Mr. Cheney never noticed it before.

60. *Guiraca cærulea.* Blue Grosbeak. In the spring of 1861, Mr. Cheney shot a fine ♂ specimen and sent it to G. A. Boardman, Esq., in whose cabinet it now is.

ALAUDIDÆ.

61. *Eremophila alpestris.* Shore Lark. Occurs plentifully in winter.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., MARCH, 1873. NO. 3.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, MARCH 17, 1873.

A PARTIAL CATALOGUE OF THE BIRDS OF GRAND MENAN, N. B.

[*Continued.*]

ICTERIDÆ.

62. *Agelæus phœniceus.* Red-winged Blackbird. Has been noticed by Mr. Cheney, but does not breed.

63. *Quiscalus versicolor.* Crow Blackbird. Occurs, but is rare. Others of this family may occur, as they are found on the mainland, but they cannot be common here, else they would have been noted.

CORVIDÆ.

64. *Corvus carnivorus.* Raven. Very common; breeds in abundance, placing its nest indiscriminately on the trees or on the cliffs. The same nest is frequented for many years. The eggs are deposited about the 10th of March. These birds are universally hated; and in truth it is no vulgar prejudice, for they are very destructive, especially to young lambs; and no chance is lost of shooting them, so that with all their proverbial vigilance, they annually decrease. The 12th of June I found an enormous nest on the outer Wood Island. It was placed on the cliff so as to be perfectly inaccessible, and contained four fully fledged young, two of which were dislodged by the plentiful use of stones. The nest in itself is a curiosity worth seeing and would make no mean load for a horse to draw. It had evidently been

the home of many broods of young plunderers, and probably will continue to be for some time to come, and a wild enough home it is, with no sound but the roar of the surf below and the harsh scream of the gull above.

65. *Corvus Americanus.* Crow. Here as elsewhere common; breeds abundantly. I think the eggs collected here are of a darker color and more intensely spotted than those collected further south. In fifty specimens obtained, there was scarcely a light example, while in the same number from Long Island or New Jersey there would be a very large percentage of light and sparsely spotted specimens.

66. *Cyanurus cristatus.* Blue Jay. Common; breeds.

67. *Perisoreus Canadensis.* Canada Jay. Not rare in winter; it may breed in the thick woods and swamps, but was not noted.

TYRANNIDÆ.

68. *Tyrannus Carolinensis.* Kingbird. Common during early June, but by the 20th all had passed over to the mainland. This seems rather strange as there is no obvious reason why Grand Menan should not afford as good facilities for the breeding of this species as New Brunswick or Nova Scotia.

69. *Contopus virens.* Wood Pewee. Not rare; breeds.

70. *Empidonax Traillii.* Traill's Flycatcher. Rather common summer resident, but extremely difficult to procure, because of its retiring habits. Its note is frequently heard in the alder swamps, but it is a rare occurrence to see one.

71. *Empidonax flaviventris.* Yellow bellied Flycatcher. Rare; probably breeds. I took but a single specimen.

ALCEDINIDÆ.

72. *Ceryle alcyon.* Kingfisher. Not common. I did not meet with it breeding.

CAPRIMULGIDÆ.

73. *Chordeiles popetue.* Night Hawk. Common; breeds. *A. vociferus* may occur, as it is given by Boardman as a summer resident at Calais.

CYPSELIDÆ.

74. *Chætura pelasgia.* Chimney Swallow. Not common; breeds.

TROCHILIDÆ.

75. *Trochilus colubris.* Ruby-throated Hummingbird. This hardy little wanderer is not uncommon in this cold and bleak region, where birds of stronger flight and hardier growth do not venture.

CUCULIDÆ.

76. *Coccygus erythrophthalmus.* Black-billed Cuckoo. Common; breeds. I took a nest, containing three fresh eggs, July 10. *C. Americanus* may occur, as it is given as common at Calais (Boardman).

PICIDÆ.

77. *Picus pubescens.* Downy Woodpecker. Common; breeds.

78. *Picus villosus.* Hairy Woodpecker. Not rare; breeds.

79. *Picoides arcticus.* Three-toed Woodpecker. Not rare in winter; may breed on the back of the island in the heavy timber, where few persons ever go. *P. hirsutus* probably occurs in winter.

80. *Sphyrapicus varius.* Yellow-bellied Woodpecker. Not common; may breed.

81. *Colaptes auratus.* Golden-winged Woodpecker, called here the Wood Pigeon. Very common; breeds.

STRIGIDÆ.

82. *Bubo Virginianus.* Great Horned Owl. Occurs in the forests, but is not often seen.

83. *Scops asio.* Mottled Owl. Common; breeds.

84. *Otus Wilsonianus.* Long-eared Owl. Rather common during summer. I got a set of fresh eggs from Whitehead Island, May 24, 1871.

85. *Brachyotus Cassinii.* Short-eared Owl. Not rare. I secured a set of eggs from the same locality as the preceding.

86. *Syrnium cinereum.* Great Gray Owl. Occurs in winter.

87. *Nyctea nivea.* Snowy Owl. Very common in winter; remains till late in spring.

88. *Surnia ulula.* Hawk Owl. Rather rare; probably breeds, as its eggs have been taken at Calais (Boardman). *S. nebulosum* and *N. acadica* probably occur.

FALCONIDÆ.

89. *Falco anatum.* Duck Hawk. Common; breeds on the cliffs, but in such inaccessible situations that its nest is rarely taken. There is a place between "Fish Head" and the "Old Bishop" known as the "Seven Days' Work," where the cliff is divided into seven strata as sharply defined as lines of masonry. On an indentation in the face of this cliff, about one hundred feet from the top, and one hundred and fifty feet from the bottom, a pair of these falcons have had their eyry for a succession of years; secure alike from the assaults of the most zealous naturalist and the small boy of bird's-egging proclivities.

90. *Hypotriorchis columbarius.* Pigeon Hawk. Not rare.

91. *Falco sacer.* Jerfalcon. Mr. Cheney has observed this superb falcon during winter.

92. *Tinnunculus sparverius.* Sparrow Hawk. Observed on Nantucket Island, near Menan.

93. *Astur atricapillus.* Goshawk. Not rare; probably breeds.

94. *Accipiter fuscus.* Sharp-shinned Hawk. Common; breeds. I secured a nest of four eggs from Whitehead Island.

95. *Buteo borealis.* Red-tailed Hawk. Not rare.

96. *Buteo lineatus.* Red-shouldered Hawk. Not rare.

97. *Archibuteo lagopus.* Rough-legged Hawk. Common; may breed.

98. *Circus Hudsonius.* Marsh Hawk. Very common; breeds abundantly in the heath, and subsists largely upon the young of *Lepus Americanus.* I took several nests.

99. *Pandion Carolinensis.* Fish Hawk. Not very common; perhaps breeds.

100. *Aquila Canadensis.* Golden Eagle. Given as rare (Boardman).

101. *Haliœtus leucocephalus.* Bald Eagle. Very common resident. On Feb. 20 Mr. Cheney found a nest in a tall pine, upon the main island; he ascended with some difficulty, and after digging a hole through the nest, secured the only egg it contained. The embryo was well advanced, but frozen. The parents did not attempt to molest him, but confined their demonstrations to sailing overhead at a respectful distance. The egg, now in my cabinet, is of a dirty white color, and measures three inches by two and thirty hundredths.

COLUMBIDÆ.

102. *Ectopistes migratorius.* Wild Pigeon. Not rare; said to breed in the interior of the island.

TETRAONIDÆ.

103. *Bonasa umbellus.* Ruffed Grouse. Rare. At North Head, June 29, I flushed a fine ♂, but was unable to shoot him; I was sorry for this, as the inhabitants insist that the grouse is never found on Menan.

CHARADRIIDÆ.

104. *Charadrius Virginicus.* Golden Plover. Rare.

105. *Ægialitis melodus.* Piping Plover. Given by Boardman as breeding on the islands in June. I did not meet with it, although I searched carefully.

106. *Æ. semipalmatus.* Ringneck Plover. Common; some breed.

SCOLOPACIDÆ.

107. *Philohela minor.* Woodcock. Rather rare; breeds in the thick alder swamps.

108. *Gallinago Wilsonii.* Wilson's snipe. Rare.

109. *Macrorhamphus griseus.* Red-breasted Snipe. Common in July.

110. *Pelidna Americana.* Red-backed Sandpiper. Not common.

111. *Ereunetes pusillus.* Semipalmated Sandpiper. Very common during August. One day while in pursuit of plover, I killed, at a single discharge, twenty-six from a passing flock.

112. *Tringa canutus.* Robin Snipe. Rather rare during summer.

113. *Arquatella maritima.* Purple Sandpiper. Very common in winter, immense flocks frequenting the stony beaches. In summer, rare. I took a single specimen, Aug. 13, among a large flock of *E. pusillus.*

114. *Actodromas minutilla.* Least Sandpiper. Very common in August.

115. *Symphemia semipalmata.* Willet. Rather common in August. The old men tell about a bird they call a "Tinkasheer" that used to breed in abundance on Menan fifty years ago, and from their description it seems to be identical with the species in question.

116. *Gambetta melanoleuca.* Winter Yellow Legs. Common.

117. *Gambetta flavipes.* Summer Yellow Legs. Common.

118. *Rhyacophilus solitarius.* Solitary Sandpiper. Common.

119. *Tringoides macularius.* Spotted Sandpiper. Common; breeds everywhere.

120. *Philomachus pugnax.* Ruff. Given by Boardman.

121. *Limosa Hudsonica.* Hudson Godwit. Mr. Cheney sent me a pair that he shot in November, 1871. They were the only ones he ever saw.

122. *Numenius borealis.* Esquimaux Curlew. Rare.

123. *N. longirostris.* Long-billed Curlew. Not rare in autumn.

124. *N. Hudsonicus.* Short-billed Curlew. Rare during migrations.

HÆMATOPODIDÆ.

125. *Strepsilas interpres.* Turnstone. Not rare in August.

PHALAROPODIDÆ.

126. *Phalaropus hyperboreus.* Northern Phalarope, "Sea Goose." Very common. Thousands may be seen all summer on the "Ripplings" about eight miles from Menan, where they congregate to feed on the shrimp and animalculæ that are drifting in the eddies made by the advancing and receding tide. They never come on shore unless driven by storms, and are so tame, especially in foggy weather, that I have almost run them down with a sail boat. *P. Wilsonii* and *fulicarius* probably occur.

ARDEIDÆ.

127. *Ardea herodias.* Great Blue Heron. Common; but I did not find it breeding.

128. *Botaurus lentiginosus.* Bittern. Rather rare.

129. *Butorides virescens.* Green Heron. Not rare; it may breed, but I do not think it does.

ANATIDÆ.

130. *Anser hyperboreus.* Snow Goose. Rare in winter.

131. *Bernicla Canadensis.* Canada Goose. Common in spring and fall; bred abundantly in years past.

132. *Bernicla branta.* Brant. Common during migrations.

133. *Anas boschas.* Mallard. Very rare.

134. *Anas obscura.* Black Duck. Common; breeds.

135. *Dafila acuta.* Pintail. Rare.

136. *Nettion Carolinensis.* Green-winged Teal. Common.

137. *Querquedula discors.* Blue-winged Teal. Rare.

138. *Mareca Americana.* Widgeon. Rare.

139. *Spatula clypeata.* Shoveller. Rare.

140. *Chaulelasmus streperus.* Gadwall. Rare.

141. *Aix sponsa.* Summer Duck. Rather rare.

142. *Fulix marila.* Greater Black-head. Uncommon.

143. *Fulix affinis.* Lesser Black-head. Common.

144. *Aythya Americana.* Red-head. Not uncommon.

145. *Aythya vallisneria.* Canvas-back. Rare.

146. *Bucephala Americana.* Golden-eye. Common in winter.

147. *Bucephala albeola.* Buffle-head. Very common in winter.

148. *Bucephala islandica.* Barrow's Golden Eye. Rare.

149. *Histrionicus torquatus* Harlequin Duck. Common in winter. It is noted, among gunners, for its diving propensities, it being almost impossible to shoot one sitting on the water, as they go under at the flash. I do not think it breeds now, although it may have done so in years past.

150. *Harelda glacialis.* Old Squaw. Very common in winter; may breed, as I saw a pair in full breeding plumage, that had been shot June 18. They would scarcely have been about at that late day without having a nest on one of the islands.

151. *Camptolœmus Labradorius.* Labrador Duck. Very rare. I received a ♀ from Mr. Cheney, that had been shot in April, 1871.

152. *Melanetta velvetina.* Velvet Duck. Common in winter. A few remain all summer.

153. *Pelionetta perspicillata.* Surf Duck. Common in winter. One day in June a specimen alighted in the yard of a house on Whitehead Island, and was captured alive.

154. *Œidemia Americana.* Scoter. Common in winter.

155. *Somateria mollissima.* Eider Duck. This is the most common of all the ducks, breeding in abundance on all the small islands about Menan, but it is fast decreasing, as not one bird in three raises any progeny, because of the continued depredations of the islanders, who rightly esteem their eggs as a great delicacy, and collect them as fast as laid. Their eggs are easily found, because of the careless manner

in which the nest is placed, an old gull's nest, with the addition of a little down, often being made to answer in place of a more elaborate structure. I saw the young, in companies of fifteen or twenty, following their parents, in the beginning of August.

156. *Somateria spectabilis.* King Eider. Rare.

157. *Erismatura rubida.* Ruddy Duck. Uncommon.

158. *Mergus Americanus.* Sheldrake. Common.

159. *Mergus serrator.* Red-breasted Merganser. It used to breed but has almost entirely left the island during the season of incubation, those remaining being only immature or unproductive birds.

160. *Lophodytes cucullatus.* Hooded Merganser. Not common and does not breed.

PELECANIDÆ.

161. *Pelecanus erythrorhynchus.* American Pelican. A specimen was taken some years since.

SULIDÆ.

162. *Sula bassana.* Gannet. It was once common and used to breed on the "Gannet Rock," but since the lighthouse has been built, the Gannets have left. The only instance in which I found it was near Dark Harbor, on back of Menan, where one solitary individual was sitting like a sentinel on a piece of the wreck of the steamer New England, that had gone to pieces on the Wolf Islands, some days before.

PHALACROCORACIDÆ.

163. *Graculus carbo.* Common Cormorant. Occurs in spring and fall.

164. *Graculus dilophus.* Double-crested Cormorant. Occurs, but does not breed now; probably it did once.

PROCELLARIIDÆ.

165. *Procellaria leucorrhoa.* Leach's Petrel. Very common and breeds by thousands on the Green and Whitehorse Islands, where the soil is so impregnated with its peculiar odor, that it is quite perceptible some distance to leeward on a windy day. They deposit their single egg about the 8th of June, incubate from four weeks to a month and if robbed will lay three times. Mr. Cheney has assured me that once, while duck shooting on Green Island on November 10, his dog dug out a young petrel still in the down, when all the other summer visitors had departed for more southern regions. Though so elegant and graceful a bird on the water, this petrel seems to lose all understanding and power on land, and when dug from its hole prefers to skulk away in the grass to taking flight; and may even be thrown like a ball from one person to another. It breeds in such astonishingly large communities that it is nothing of a feat to dig four or five hundred eggs in a single day; but the most energetic oölogist would scarcely undertake a second day's work, as the first would have worn

off his finger-nails, and demoralized his hands and arms to such an extent that he would gladly stay at home and blow his eggs.

166. *Oceanites oceanica.* Wilson's Petrel. Occurs on the fishing grounds, but does not breed.

167. *Procellaria glacialis.* Fulmer. Occurs on the fishing grounds in autumn.

168. *Nectris fuliginosus.* Sooty Shearwater. This species and the two succeeding are given by Boardman, but were not noted by myself.

169. *Puffinus major.* Greater Shearwater. Haglin.

170. *Puffinus anglorum.* Mank's Shearwater. Black Haglin.

LARIDÆ.

171. *Stercorarius pomatorhinus.* Pomarine Jaëger. Common in autumn on the fishing grounds.

172. *Stercorarius parasiticus.* Arctic Jaëger. Common fall visitant; comes about the fishing boats to pick up bits of bait, and is so tame that it is often killed with a gaff.

173. *Stercorarius cepphus.* Buffon's Jaëger. "Marlin-spike Bird." "Common in the Bay of Fundy in August" (Boardman).

174. *Larus glaucus.*, Burgomaster. Winter resident.

175. *Larus Hutchinsii.* Hutchins' Gull. I have a fine specimen of this rare gull, killed by Mr. Cheney's son in January, 1872. It corresponds exactly with a specimen, in the cabinet of G. N. Lawrence, Esq., that was shot on Long Island.

176. *Larus leucopterus.* White-winged Gull. Noted by Dr. Brewer.

177. *Larus marinus.* Great Black-backed Gull. Common winter resident; used to breed with the Herring Gulls, but being of a wilder nature it was the first to move in the direction of new and more secure breeding grounds.

178. *Larus argentatus.* Herring Gull. Very abundant and breeds on almost all the islands, in every situation, from the open heath to the ragged and precipitous cliff. On the Southern Head is a very extensive nursery, and from the edge of the cliffs the eggs can be counted by the hundred, all the way down, until they grow indistinguishable in the distance. But little effort is made to secure these eggs, as of late years it has been rightly deemed too dangerous an undertaking to descend the cliffs, even with the aid of a rope. I know of at least one adventurous climber who met with a fearful death in consequence of his temerity. The present inhabitants of the island can remember when it was an easy thing to go out and collect four or five hundred eggs in an afternoon; but, alas! those times are no more and unless something is done, and that soon, to prevent the promiscuous destruction of these useful birds, gulls' egging at Grand Menan

will be among the things of the past; for though to a stranger the eggs seem so abundant, the inhabitants represent them as few compared with the myriads of former years.

179. *L. Delawarensis*. Ring-billed Gull. Common during migrations.

180. *Chrœcocephalus atricella*. Laughing Gull. Given as breeding by Boardman.

181. *Chrœcocephalus Philadelphia*. Bonaparte's Gull. Common in autumn.

182. *Rissa tridactyla*. Kittiwake. Common in winter but does not breed, which is curious, as the cliffs afford most excellent nesting-places.

183. *Pagophila eburnea*. Ivory Gull. Winter visitant.

184. *Sterna Wilsoni*. Wilson's Tern. Breeds on the Seal islands.

185. *Sterna macroura*. Arctic Tern. Rather rare. Others of this family probably occur, but are not recorded.

COLYMBIDÆ.

•186. *Colymbus torquatus*. Loon. Common about the islands, but does not breed.

187. *C. arcticus*. Black-throated Diver. Occurs in winter.

188. *C. septentrionalis*. Red-throated Diver. Winter resident.

189. *Podiceps griseigena*. Red-necked Grebe. Rather common. *P. cristatus* and *podiceps* may occur, as they have been noted at Calais.

ALCIDÆ.

190. *Alca torda*. Razor-billed Auk. This bird is still common about the Murre rocks and Seal islands, where it breeds without much molestation. A curious circumstance connected with the breeding of this species here is that it never associates with *Uria grylle*, but is sole occupant of these two places, which seem to afford as advantageous nooks and crannies to the Guillemot as to the Auk. The only explanation is that the Razor-bills drive them away.

191. *Alca impennis*. Great Auk. Formerly occurred, as bones have been dug from the shell-heaps of Nantucket island, close to Menan.

192. *Uria grylle*. Black Guillemot. Common yet, but is doomed to extinction; as are all the sea-birds that still haunt these old breeding places, each spring seeing fewer birds come back to breed than went away in the fall.

193. *Uria lomvia*. Foolish Guillemot. Common in winter, but never breeds.

194. *Mergulus alle*. Sea-dove. Common winter resident, but none stop to breed.

TWENTY-FIFTH ANNIVERSARY,

WEDNESDAY, MARCH 5, 1873.

During the winter of 1872–3, at several meetings of the Essex Institute, the matter of the proper celebration of the twenty-fifth anniversary of the Society was discussed, and as the outcome of these deliberations, the matter was put into the hands of a committee, with full powers. The committee consisted of H. Wheatland, A. C. Goodell, Jr., Wm. Sutton, F. W. Putnam, D. B. Hagar, A. H. Johnson, John Robinson, James O. Safford, E. S. Atwood, E. C. Bolles, G. D. Phippen, Joshua Coit, George M. Whipple, Caleb Cooke, Wm. Neilson.

The various sub-committees were chosen as follows:—

On Invitations, A. C. Goodell, Jr., E. S. Atwood, D. B. Hagar, H. Wheatland, E. C. Bolles.

On Finance, William Neilson, J. O. Safford, A. C. Goodell, Jr., H. Wheatland.

On Decorations, John Robinson, C. Cooke.

On Banquet, A. C. Goodell, Jr., E. S. Atwood, A. H. Johnson, D. B. Hagar, G. M. Whipple.

On Printing, F. W. Putnam, J. O. Safford, Henry Wheatland.

Weekly meetings of the committee, for the comparison of views and the perfecting of plans, were held at the houses of various members, and arrangements were finally made for a literary festival and banquet at Plummer Hall on the evening of March 5, 1873. Invitations were sent to various gentlemen of high literary and scientific repute, and tickets were issued to members and their friends at five dollars each.

About seven o'clock the members and invited guests assembled in the upper hall of the Institute building. The beauty and talent of the city were well represented. Among the distinguished invited guests, most of whom were present, were his Excellency the Governor; President Loring of the Senate; Speaker Sanford of the House; his Honor Mayor Cogswell; Hon. R. C. Winthrop, President of Massachusetts Historical Society; Hon. Stephen Salisbury, President of American Antiquarian Society; Prof. Asa Gray, President of American Academy of Arts and Sciences; Hon. Marshall P. Wilder, President of the New England Historic-Genealogical Society; T. T. Bouvé, President of the Boston Natural History Society; J. D. Runkle, President of the Massachusetts Institute of Technology; William Wood, M. D., President of the Portland Society of Natural History; O. C. Marsh, Professor of Palæontology in Yale College; Nathaniel Paine, President of the Worcester Natural History Society; President Eliot and Professors Agassiz, Pierce and Lovering of Harvard University; John G. Whittier; E. H. Chapin, D. D., of New York, and others.

After the guests had assembled and a short time had been spent in social intercourse, the company proceeded to the lower hall, which had been fitted up as a banqueting room. Three tables extended through the entire length of the hall, at the heads of which were seated Vice Presidents Wm. Sutton, A. C. Goodell, Jr., and F. W. Putnam, and at right angles to these, on the platform, a table was spread for the invited guests. In the alcoves, to the right and left of the guest table, were spread tables for the reporters. The hall had been tastefully decorated under the direction of Messrs. John Robinson and Caleb Cooke. On the gallery front, over the guest table, was a white tablet, bordered with green, with the inscription in box and brilliant autumn leaves, 1848—E. I.—1873. Running round the gallery front, over each alcove, were similar tablets, bearing the names of the Presidents of the Institute, and of the Essex Historical and Essex County Natural History Societies, by whose union the Institute was formed. The names as read round were as follows:—NICHOLS, TUCKER, WHITE, HUNTINGTON, WHEATLAND, PEABODY, PICKMAN, HOLYOKE, RUSSELL. To the right and left of the stage were tablets inscribed: E. H. S.—1821. E. C. N. H. S.—1833. In front of each alcove in the library was suspended a hanging basket filled with growing plants. The columns were wreathed with evergreen, and topped with masses of hemlock. To the right and left of each column were carved brackets, with vases of choice flowers. The fronts of the library cases were covered with material of a pearl gray color, to form a background for pictures. Portraits of Goethe, Humboldt, Hyrtl, Müller, Cuvier, Agassiz, Hawthorne and other eminent men adorned these improvised walls. Ferns and growing plants of every variety were massed wherever there was room to display them. The whole arrangement evinced fine taste and a nice appreciation of the proprieties of the occasion.

The banquet was prepared under the supervision of Mr. Edward Cassell. The tables glittered with elegant china and silver ornaments, relieved by bouquets of exquisite flowers furnished by Francis Putnam and arranged with great taste by W. H. Gardner. The supper, which was of several courses, was served up in the following order:

FIRST COURSE.

Raw Oysters; Escalloped Oysters; Curried Oysters;
Lobster Salad; Chicken Salad.

SECOND COURSE.

Filet de Bœuf; Sweetbreads; Pâté of Chicken; Tongue.

THIRD COURSE.

Boned Turkey; Grouse; Quail; Partridge; Fowls.

FOURTH COURSE.

Frozen Pudding; Charlotte Russe; Tom Thumb;
Bon Glace; Wine Jelly.

FIFTH COURSE.

Ices: Chocolate, Vanilla, Lemon, Pine Apple, Strawberry, Harlequin Fruit.

SIXTH COURSE.

Apples;, Oranges; Bananas; Figs; Crystallized Fruits and Nuts.
Cake: Currant, Citron, Pound, Sponge, Cocoanut,
Macaroons, Meringues.
Coffee; Tea.

The number who sat down to the feast must have been not far from one hundred and seventy, and included both ladies and gentlemen.

The company was seated at the table at half past eight, and was called to order by the President, Henry Wheatland, who requested the Rev. E. S. Atwood to offer prayer. After an hour pleasantly spent in discussing the supper in all its bearings, the company being regaled with the choice selections performed by Upton's Quadrille Band, the literary portion of the entertainment was introduced with the following address by the PRESIDENT:—

LADIES AND GENTLEMEN: — We are assembled this evening to commemorate the formation of the Essex Institute in 1848, by the union of the Essex Historical and the Essex County Natural History Societies. It is, perhaps, needless to trace in detail the growth of these institutions; the principal facts in their history having appeared in the printed publications of the Institute.

The occasion, however, suggests many associations that cannot be passed over in silence; this place and its surroundings are crowded with them—the building—the varied relics—the books—are not without their history, and are continually reminding us of the debt of gratitude we owe to those through whose instrumentality they were obtained.

Some remind us of the Social Club, composed of the leading spirits of the town, that was wont to hold its weekly meetings, during the middle of the last century, at the old Pratt's Tavern, to discuss the topics of the day, especially those of a literary and scientific character. Thence originated the Social Library in 1761.

Others bear the signature of "R. Kirwan," a celebrated Irish chemist, and call to remembrance some of the scenes in the Revolutionary period,—the privateer Pilgrim, its bold and intrepid commander, Hugh Hill, his daring exploits, the capture, in the English Channel, of a schooner having on board a portion of the library of this distinguished chemist, the bringing of these books into the neighboring port of Beverly, the purchase of the same by some seven scientific men of Salem and Beverly,—and hence the origin of the Philosophical Library, in 1781.

The collection of log books and sea journals calls to mind that brilliant commercial career which immediately followed the closing drama of the Revolution, when the sails of our merchantmen whitened every sea, and the products of the most distant climes, "divitis Indiæ usque ad ultimum sinum," were landed at our wharves. In the midst of this prosperity the navigators in those remote seas organized a society to assist the widows and children of deceased members; to collect such facts and observations as tend to the improvement and security of navigation and to form a museum illustrative of the civil and natural history of the countries visited during their long and protracted voyages. The nucleus then formed in 1799, by gradual accretions became the world-renowned museum of the East India Marine Society. This museum, and the scientific collections of the Institute, have recently been rearranged in the East India Marine Hall, under the direction of the trustees of the Peabody Academy of Science, and opened to the public, free, six days in the week.

The portraits on these walls, the old relics in the cabinets, the frame of the first building erected for the first church in Salem, cared for and placed in good condition for preservation by the kindness and liberality of our late President, Francis Peabody, are alike suggestive of topics for consideration; but time will not permit me to dwell longer.

In 1638, Emmanuel Downing, of the Inner Temple, London, came to Salem, where he lived several years in great esteem, often representing the town in the General Court. His dwelling was on or near this spot, in the middle of an estate comprising some four acres. His wife was a sister of Gov. Winthrop. His son George, a lad of about fourteen summers, was preparing, under the tuition of Rev. John Fisk, to enter the college, where he graduated in the first class in 1642. This son then went to England, entered into Cromwell's service and became highly distinguished. Was his (Cromwell's) minister to the Hague, and afterwards held the same situation under Charles II, from whom he received a baronetcy; united with "the blood of all the Howards," by marrying Frances, sister of the first Earl of Carlisle. A grandson, Sir George Downing, dying in 1747, left a large bequest (£150,000) for the founding of Downing College, in Cambridge, England.

Ann, the youngest daughter of Emmanuel, came into possession of this estate, and the mansion in which she resided was a few rods west of this spot. She first married Capt. Joseph Gardner, who was killed, Dec. 19, 1675, at the great Narraganset Swamp fight, in King Philip's war. Secondly, she married Simon Bradstreet, and there the old Nestor governor of Massachusetts lived and died. The house was then known as the Bradstreet mansion, and was taken down about 1750. Gov. Bradstreet had previously married Ann, daughter of Gov. Thomas Dudley. She is the most distinguished of the early matrons by her literary powers; a volume of her poems is now extant.

Nearly opposite the last named house, on the western corner of Liberty street, was the residence of Major William Hathorne, who came to Salem in 1636, and from that date his name appears in our records as holding important positions,—Commissioner, Speaker of the House of Representatives, counsel in cases before the courts, judge on the bench, soldier commanding important and difficult expeditions, etc.

Johnson, in his "Wonder-Working Providence," thus says of him: "Yet, through the Lord's mercy, we still retaine among our democracy the godly Captaine William Hathorne, whom the Lord hath imbued with a quick apprehension, strong memory and rhetorick, volubility of speech which hath caused the people to make use of him often in public service especially when they have had to do with any foreign government."

He died in 1681. His son John seemed to have inherited many of his traits of character, and to have succeeded in all his public honors, and held a like prominent position in public affairs till his decease, which occurred in 1717. In an easterly direction, on Union street, in a small two-story gambrel-roofed house, a descendant in the sixth generation was born, in 1804, whose name has been equally if not more conspicuous in the field of letters than either of his ancestors had been in the civil history of the colony.

A few rods in a northerly direction we find the birthplace of Bowditch, whose "Navigator" is in the hands of every seaman, and who, as translator of La Place's "Mecanique Celeste," is ranked among the leading mathematicians of his age.

The house that was taken down to erect on its site the building in which we are assembled was the place where Prescott, the historian, first saw the light of day; and afterwards, for nearly half a century, it was the residence of one of our most successful and opulent merchants, Joseph Peabody.

In this connection, it is meet that we should pay a tribute of respect to the memory of Miss Caroline Plummer, a lady of great literary culture and refinement, who died in May, 1854, and bequeathed to the proprietors of the Salem Athenæum, the sum of thirty thousand dollars for the erection of a building, to deposit therein the books of the Athenæum, with liberty to have the rooms used for the meetings of literary and scientific societies and for the deposit of works of art and natural productions. If you desire to know in what manner this money has been expended, and ask for her monument, "Circumspice!"

This locality, around which cluster so many associations of exceeding interest to the student in history, the scholar, the scientist, and the general public, seems to be especially adapted for the establishment of an institution for the promotion of literature, science, and the arts. A good beginning has thus far been made,—additional land and more buildings will be requisite to furnish suitable accommodations for its proper management.

Let us resolve, henceforth, that we will not pause in our efforts until this so desirable an object shall have been successfully accomplished. Thus, supplementing the scientific collections in the hall now owned by the trustees of the Peabody Academy of Science, Salem will be well provided with materials for the promotion of general culture and education among her citizens.

A brief allusion to the tablets on the railing, containing the names of the several ex-presidents, may not be inappropriate at this time.

The first in chronological order, EDWARD AUGUSTUS HOLYOKE, M. D., LL. D., President of Essex Historical Society, 1821–1829, graduate of Harvard in the class of 1746, came to Salem in 1749. The first medical charge in his books bears date July 6, 1749; the last Feb. 17, 1829; covering a period of nearly eighty years in the profession at Salem; an active member of the Social Library in 1761; of the Philosophical Library in 1781; and at the time of his death, March 31, 1829, he was President of the Salem Athenæum, and of the Essex Historical Society; thus interested in the literary and scientific societies in Salem for sixty-eight years. He was an original member of the American Academy of Arts and Sciences, and also of the Massachusetts Medical Society; of both of these societies he had been elected President, of the latter institution the first.

BENJAMIN PICKMAN, President of Essex Historical Society 1829–35, a graduate of Harvard, class of 1784; member of the two houses of our State Legislature, and one term a member of Congress; a merchant, and a liberal friend to our public institutions. He died in 1843.

ICHABOD TUCKER, President of Essex Historical Society, 1835 to 1837; born in Leicester; graduate of Harvard in 1791; commenced the practice of the law in

Haverhill; removed to Salem about 1807; Clerk of the Courts for Essex for upwards thirty years; died in 1846.

Daniel Appleton White, President of Essex Historical Society, 1837–48, and President of Essex Institute, 1848–61; born in that part of Methuen now Lawrence; graduate of Harvard in the class of 1797; commenced the practice of the law in Newburyport; removed to Salem in 1815; Judge of the Probate Court of Essex for more than forty years; died in 1861; a fine classical scholar.

Andrew Nichols, President of Essex County Natural History Society, 1833 to 1845, a valued physician; born in the rural part of Danvers he early imbibed a taste for the study of nature, which continued through life. He was very conversant with the local natural history of this vicinity, and took a great pleasure in guiding his young friends to the rural retreats, in quest of some rare floral gems. He lived in South Danvers, now Peabody, and died March 31, 1853.

John Lewis Russell, President of Essex County Natural History Society, 1845–48, Vice President Essex Institute 1848–61, a graduate of Harvard in the class of 1828, and of the Theological School in Cambridge in 1831, distinguished as a botanist, and especially conversant with our cryptogamic flora. He was also an able and instructive lecturer on the various departments of Natural History, especially in his favorite one, Botany.

Asahel Huntington, President of Essex Institute 1861–65, born in Topsfield; a graduate of Yale in 1819; commenced the practice of the law in Salem; District Attorney, and for many years preceding his death, which occurred Sept. 5, 1871, was the genial and efficient Clerk of the Courts for Essex.

Francis Peabody, President of Essex Institute 1865–7;

born on the spot where we are now assembled, and with the exception of a few years had resided in this immediate vicinity, always interested in scientific investigations and mechanical industries. He died October 31, 1867.

Before taking my seat, permit me to allude briefly to the status of the two societies at the time of the union. It required considerable billing and cooing to bring about the desired result, the organization of the two being on an entirely different basis.

The Historical Society always had a small membership. Members were elected; an entrance fee was required; no regular assessment, though occasionally one was levied; rooms never opened to the public at stated times, though persons could obtain access by calling upon the librarian or some officer who was always courteous and ready to grant any favor.

The Natural History Society was on an entirely different basis. Any inhabitant of the county could become a member by signing the constitution and paying the small annual assessment. The rooms were always central and accessible; opened frequently for horticultural and other exhibitions; its aim to make the rooms attractive, thereby to awaken a public interest in furtherance of its objects. The collections increased in value and importance; the membership was enlarged; consequently more available means to extend its operations. The Horticultural Exhibitions, though not an original object, became in course of a few years one of the most important features of the society, and at the time of the union were included as one of the departments. For several years exhibitions were held weekly during the summer months, with the annual in September, and increased in interest with each successive season.

Several nurseries were established, the demand for fruit trees, and ornamental trees and shrubs increased, and Salem became, as it were, a centre for horticultural operations, and the exhibitions at the metropolis were largely indebted to the Salem gardens for the requisite proportion of fruits and flowers.

This city and vicinity had a goodly array of enthusiastic and successful cultivators of the choicest productions of Flora and Pomona; among them the name of Robert Manning stands prominent, as a pioneer in the cultivation of fruit, especially that of the pear. The garden of Mr. J. F. Allen exhibited for several seasons a fine display of that gorgeous lily "Victoria Regia," and his excellent treatise on that flower, with illustrations, finds a place in every public library. It was also noted for the great variety of grapes and other fruits grown under glass. The gardens and grounds of the Messrs. Putnam, Lee, Cabot, Emmerton, Upton, Ives, Bertram, Hoffman, Phippens, Ropes, Bosson, and others, may be mentioned in this connection.

The guiding principles that actuated the Natural History Society were engrafted upon the new organization, and to these what little success it has had may be justly attributed.

For an institution to succeed it is necessary to interest the people in its success, by horticultural and other exhibitions, permanent display of works of art and natural productions, instructive and at the same time attractive lectures, field and other meetings that will combine amusement with instruction, so far as not to compromise its dignity and standing,—having always in view, however, the promotion of the primary and leading objects of its organization. I thank you for your attention to this brief recital of a few thoughts suggested by the occasion.

At the conclusion of his address, the President requested Vice President D. B. Hagar to officiate as master of ceremonies for the occasion, which he did in his usual graceful manner, and not only were his few opening remarks characterized by wit and pleasantry, but he introduced the various speakers with a very nice savoring of clever things that did much to make the stream of oratory run smoothly.

The Health of Gov. Washburn was proposed who responded as follows :—

Mr. President, Ladies and Gentlemen :—I am happy to meet you on this interesting occasion. Having been in your city but once during some twenty years, and then for only a few hours, I am to most of you an entire stranger. But your reception has made me feel that I am among friends, and I thank you for this opportunity of an acquaintance with those whom I have learned to honor, not only for their personal qualities, but for the good work in which they are engaged. Not to be somewhat conversant with the early history of Salem is to be ignorant of the history of the Commonwealth. Here was one of the first settlements of the colony of Massachusetts Bay. Hither came Endicott and Winthrop, names foremost among those of our colonial times. Here the former lived and died, and here are still found his direct descendants. Here Roger Williams lived and preached till the people, believing his doctrines injurious to the best interests of the community, compelled him to seek a locality more favorable to his peculiar tenets. This was the home of Story and others who have adorned our judiciary, and some of the most influential members of Congress and the national cabinet have resided here, while time would fail me to mention the names connected with this locality which are favorably known in literature. Neither can I forget, for I have had it thrown in my face often during the last few years, that this is particularly the place where witches were hung. I know that unmeasured abuse has been heaped upon your ancestors for this fact. They were stern men in their judgments of evil and evil tendencies, and they had stern and swift methods of dealing with those whom they believed dangerous to society and religion. Unquestionably they erred in their treatment of the witchcraft delusions, but I confess to something of admiration for the spirit and moral courage which they displayed. I am aware, also, that for a long period yours was the chief commercial city of the State. While it has lost its position in this regard it is rapidly assuming the characteristics of a manufacturing community, and I trust it may see a thriving and prosperous future. The new and elegant structures which meet our glances on every hand, are tangible evidences of thrift pleasant to observe, and I am glad to notice that some edifices yet remain as monuments of the taste and skill of former generations. Mere outward, physical developments are not, however, what should most be valued in your city; it is of far more consequence that rare facilities have been and still are afforded for moral and intellectual growth and culture. This indeed is one of the marked peculiarities of our Commonwealth. We are not without internal improvements of which we may be justly proud; there are abundant witnesses of the energy and enterprise of our people—wharves and warehouses and manufacturing establishments of one kind and another. But these are not the things that have given Massachusetts its chief renown and standing before the world. Partially at least we owe our good name to the qualities which characterized our ancestors, and we shall find that this good name has departed from us when we have fallen from public and private virtue. The true greatness of a community is in its moral worth. The desire to give our children a better education and better advantages in every respect than we ourselves were permitted to enjoy, to test and make the most of the intellectual and moral powers of every human being—this is an omen of the most encouraging promise. Jealous of each other, jealous of our neighbors, we may be; but what parent is there who is not anxious to secure for his children the privileges that will best fit them for life's duties? Intelligence, earnestness in the search for truth, desire for something purer and better—these are among the real signs of prosperity. That you have not been unmindful of this nobler good I find testified by what I see around me. The twenty-fifth anniversary, which we have assembled to-night to commemorate, is an indication that the improvement of the citizens of Essex has not been neglected. The happy and valuable influence of this society has been felt in every town of the county, and we may reasonably indulge the hope that it will continue to be felt for many long years to come. When I look upon its President, growing gray in his honorable work, and reflect that his power for good is not to be computed by figures, I cannot but wish that some way were devised for retaining the benefit of that power after the machinery which now propels it is worn out. You do wisely in preserving the records of his labor. He will pass away to the great company of those who have given your town its worthy name in our history, but the fruit of his endeavors will live and be perpetuated from generation to generation, not only in these beautiful records, but in the lives and labors of the thousands of young men and young women of Essex who are even now reaping the results of his work. They constitute the new machinery which will preserve and keep in active use the powers we all honor so much to-day, and thus the years that are to come after we have gone to our reward will find him still a beneficent force in the community.

In response to a toast to the city of Salem, the Mayor, GEN. WM. COGSWELL, spoke as follows: —

I yield to no one in my sympathy with the aims and objects of this Institute, which to-night celebrates and completes its twenty-fifth year of existence. Though a passive rather than an active member of it, I have never failed to watch with interest its doings, and I can bear witness to its success; and to you, Mr. President, chiefly and above all others, is due the fact that we of a younger generation have seen the coming in, and do now see the going out, of the year which goes to make the first quarter of a century of its existence; and as some of these gentlemen about me will say that a man who has weathered the storms of twenty-five years of his life is more likely to live another equal term of years than one who has not reached that age, so I believe that this is but one of another and still another, and many more quarter centuries, of an institution dedicated to a higher education and better knowledge of the good old County of Essex.

I cannot refrain from saying again, that whatever measure of success, whatever of advancement, whatever of good, has so far been obtained, is, as it seems to me solely because of the devotion, industry and skill of one whose modesty on this, and on other occasions, is the best indication of the true worth of its possessor. Seldom, sir, is it given to man to see so much of the success of his own good works, as is given to you on this occasion, while it is never given to us to appreciate at their full value such works, until the hand, the heart, the brain which wrought them out, has passed from among us — a day, in this case, which I pray for your own sake and for our sakes, may be long delayed. But the hour is late; others you await. So far as the City of Salem is concerned, I would thank you for the courtesy you have extended to her on this occasion. She has always watched with pride and satisfaction the onward, upward course of the Essex Institute, an institution which she regards as one of her own, and as among her children; and I feel that I can pledge you notwithstanding the small margin which allows me to speak for her at all, I feel that I can pledge you, certainly, with the consent of the gentleman opposite, the earnest coöperation and best wishes in the cause of science as advanced by the Essex Institute.

Hon. MARSHALL P. WILDER was introduced as the President of the New England Historic-Genealogical Society, and as the President of the American Pomological Society. "*By their fruits ye shall know them.*"

MR. PRESIDENT:—You have called on me to respond for two institutions, and thus to do double duty while I am scarcely able to perform the service for one satisfactorily. But, sir, I am most happy to be here and to enjoy the privileges and pleasures of this most interesting occasion. Three years ago the New England Historic-Genealogical Society celebrated its twenty-fifth anniversary, when we were honored with your presence; and I am here now to reciprocate that favor, to join heart and hand in this festival, and to assure you of our desire to coöperate with you in efforts to promote the welfare of your association. Most heartily do I congratulate you on the prosperity of your institution and upon the great good it has already accomplished for the world. It is not often that the founders of institutions live to reap the harvest of their own sowing, but you, sir, have stood by the cradle of its infancy and have watched its growth and are now permitted to rejoice with us in its full manhood and extensive usefulness.

Your association, like our New England Society, is giving special attention to the preservation and transmission of New England's history to future generations, and it is indeed a grateful and noble service. " History," says a renowned author "is but the development of God's grand plan, to preserve the treasures of human thought, and to increase for countless generations the absolute wisdom of mankind." And what more benevolent and glorious work can we have than the preservation of the history of our own beloved New England! Time will not permit me to refer to the early history of the colonies, with which Salem was so intimately connected, or to those principles of piety, patriotism and philanthropy, which laid the foundations of our free institutions, which have made our nation what it is, and which we believe are yet to revolutionize and christianize the nations of this earth; suffice it to say, that in all that pertains to civil and religious liberty, in whatever relates to the great and benevolent enterprises of the age, Massachusetts has ever stood forth prominently as the champion of progress and principle. It would be pleasant, had we time, to revert to some of the great events and great men which characterize her history from the time when Endicott and Winthrop landed on your shores. I cannot refrain, however, from alluding to a few of her sons who have moved on the stage of life within the last hundred years, and whose names and deeds will gild the page of American history with an effulgence which will shine brighter and brighter unto the perfect day; to Hancock whose bold sign-manual was affixed first to the ever memorable Declaration of Independence; to Franklin who drew the electric spark from the clouds and held it in his hand; to Morse who trained it in the way it should go, and taught it to speak all the languages of the globe; to Field who laid that mystic wire in the fathomless depths of old ocean from continent to continent; to your own Peabody, whose munificent bequests are the praise of all people, whose remains were sent home under royal convoy, here to rest in the bosom of your own soil; and to Ames, all honor to his name, to whose indomitable energy and perseverance, we are indebted more than to any other man, for opening up a grand highway for nations across this continent in all coming time.

You have alluded to me, sir, in connection with the great industrial pursuits of our country. I thank you for your recognition of the American Pomological Society, which is also to celebrate its twenty-fifth anniversary in Boston next September, when I hope we may be honored with a large delegation from your institution, and where you will be cordially received by its first president, although I hope he may not be its last. Nor would I forget how much we are indebted to Essex County, especially to Salem for the promotion of the agriculture and horticulture of our land. Here was planted by Gov. Endicott one of the first, if not the first nursery, and the first pear tree in New England of which we have any account, and I am happy to know that the old monumental tree still survives. Here were planted just fifty years ago the Pomological Gardens of Salem, in which still live many noble trees as grand memorials of the planter, Robert Manning, to whom Mr. President, you alluded in your opening remarks. To him and to his son of the same name, who resides on the old homestead, the Massachusetts Horticultural Society and the country are indebted largely for the services they have rendered to the cause of American Pomology. These gardens at one time contained about two thousand varieties of fruits, and where Mr. Manning, the father, had actually proved under his own inspection, eighty varieties of American apples and sixty varieties of American pears, with many other fruits. But Governor Endicott, or Robert Manning, could not have anticipated the influence of their example in fruit culture, which has now spread throughout the land, nor the immense quantities of fruit sent from the western and Pacific states to our eastern shores; nor the amount exported annually to Great Britain, there having been shipped in one vessel from Boston to Liverpool the last week more than two thousand barrels of apples. And now, sir, I desire to place on record the influence of the Essex Agricultural Society; a society which for more than half a century has stood at the head of the agricultural societies of this state, maintaining its high position to the present time. There may it stand forever. Its first president was Timothy Pickering, who had also been secretary of the first agricultural society ever established on this continent, the Philadelphia Society for the Promotion of Agriculture. It has been my privilege to be acquainted, and to labor, with many of the presidents of the Essex society, down to the present incumbent, whose hand and heart are open to every good word and work, and I stand here to-day to acknowledge the great good which the cultivators of your county have conferred on the world. But Mr. President, I must bring these remarks to a close. I thank you for remembering me in connection with the cultivation of fruits and flowers. From my childhood I have loved the cultivation of the soil and the enjoyments which spring from rural life; I am very fond of communing with nature, whether in her sublime or merry mood; I love to hear the thunder roll its awful diapason through the skies; I love to see the lightning flash its fiery gleam from pole to pole, I love the blooming spring odorous with the fragrance of the garden and orchard, the summer landscape rich with the verdure of the forest and the field, the mellow autumn when nature pours from her overflowing lap the ripened treasures of the year. And I love to be remembered as one who has endeavored to do something for the improvement and embellishment of mother earth; something which shall contribute to the comfort and happiness of my fellow men; and may I not also add, in this presence, something which shall redound to the honor and benefit of our own New England; something which shall live when I am dead.

Prof. O. C. **Marsh**, of Yale College, being called upon, paid the high compliment to the Institute that through its influence the botany and zoology of Essex county were better understood than that of any other county in the United States. He spoke of the noble work the Institute had done in diffusing scientific knowledge over all parts of the country, and encouraging other societies designed to promote the same objects. It was at the hands of the Essex Institute that he himself acquired his taste for scientific investigations. He hoped that this was only the beginning of the usefulness of this society, and that we might all be present at its golden wedding, twenty-five years hence.

President J. D. **Runkle**, of the Massachusetts Institute of Technology, said his institution was merely following in the tracks of the Essex Institute—"we are making use of scientific knowledge by adapting it to the practical affairs of life."

Hon. **George B. Loring**, being called upon as President of the Massachusetts Senate, spoke as follows:—

Mr. President:—I accepted your invitation to be present on this occasion so full of interest to the lovers of science and good learning, and to you especially, the founder and curator of this institution, with a firm conviction that in all this assembly I should be allowed to enjoy an "evening at home," and to listen to the remarks of the distinguished gentlemen from abroad who have come here to honor us by their presence, and to encourage and edify us by their words. It was not until I was approached by the now existing president and toast-master of this occasion, with the question:—"What shall I set you off with this evening" (as if I were ready to be set off at any time and on any notice), that I realized that I should have any part to perform here. I am reluctant even now to respond; but I suppose a double presidency must be obeyed, especially in an institution where the voice of a single leader and presiding officer has always been considered supreme. And so I follow the example set me and endeavor to obey also.

As a citizen of Salem, I feel under great obligations to you and your associates for furnishing us with this opportunity to learn how worthy of all admiration our community is. The achievements of Salem in time past have not been forgotten by the gentlemen who have preceded me. They have not forgotten the efforts made by our ancestors to contribute their share to the independence, prosperity, intelligence and elevation of the nation of which we form a part. It is pleasant to be reminded of this, and to realize from the testimony of those who have no personal interest in, and attachment to, this spot, how worthy of all admiration is that record of past service, which the Essex Institute is gathering together and preserving with so much industry and care. I am gratified to know that Salem is considerable of a place after all.

To us who are surrounded by all the blessings which our ancestors bestowed upon us, this fact has long been familiar. This institution, whose twenty-fifth anniversary we now celebrate, busy as it always is in keeping the history of this city and of Essex County fresh in the minds of the people, forms a part of a system of education, study and investigation, which attracted the earliest attention of our people. The establishment of institutions of learning occupied much of the thought of our ancestors; and we point with pride to the fact that not only to the common school but to the higher seminaries of learning, to the Lyceum, and to the Library, and the Historical Society, and the Scientific Association, did this city turn its attention in the very commencement of its prosperity, and when she was obliged to set an example to others, instead of finding an example ready at her hands to follow.

That this tendency to intellectual enterprise grew out of the more commonplace virtue of industry in material affairs, who can doubt? Our fathers were a busy race. They believed in labor, and a constant exercise of their faculties in every good work. They were true to that fine principle of society laid down in those admirable volumes, Sandford and Merton, which we prized so highly and read so constantly when books were few, and newspapers were weekly, where the call of Mr. Barlow upon his associates to join him in founding a colony is recorded. Even our first governor had an impulse in the direction of toil; and John Endicott exerted himself to plant the single pear tree which now bears his name, before he abandoned the fields of agriculture, and entered upon the harder service of statesmanship. I rejoice in the industry and vigor of those men who gave us a community, and whose precepts have not yet been forgotten by the enterprising, and successful, and intelligent laborers in this vineyard which we have inherited. For the part which this institution has performed in the encouragement of scientific research, as one element of our busy civilization, this country ought always to be grateful. I value all the accomplishments of our people, their ingenuity and skill, their vigorous literature, their advancement in the business of common school education, their devotion to the cause of freedom, their material success, their intellectual accomplishment, their moral elevation which calls for honesty, and frowns on dishonesty,.in public affairs. But I think I am more gratified with the bond they have created between themselves and other nationalities, by their progress in practical science, than by any other of their achievements. I am reminded here, that it was not the skill of the diplomatist which opened to the inquiring young American the great triumph of European engineering, but the reputation secured by a son of this town, a friend of this institution, Benjamin Peirce, the great explorer in the profoundest fields of mathematics. For this recognition, I am profoundly grateful; and I congratulate the young men who are giving their energies to the scientific association of the Essex Institute, on the position secured for them in these modern days, by the great leaders whom they follow through the field upon which they have entered.

I congratulate this city on the existence of the Institute, and I congratulate the founder of the Institute that his eyes behold this cheering and joyful anniversary.

NATHANIEL PAINE, Esq., President of the Worcester Natural History Society, returned thanks to the Essex Institute for its example, which had been a great benefit to the Worcester society, and tendered his warm congratulations on the attainment of this anniversary.

Rev. E. S. ATWOOD then read the following poem:—

"Poeta nascitur, non fit," they say,
That is, you cannot make him, any way.
His song bursts forth in sweet spontaneous swell,
You cannot draw it from a stoned up well;
No rude compulsion wakes the sleeping lyre
To thrill with music through each golden wire.
The sweet south wind with soft Æolian blows,
Too light to crush the petals of the rose,
Calls from the strings the rich, low breathed refrain,
That flings the summer's music back again;
But blustering Boreas, with his rude emprise,
All to no purpose with his roughness tries.
In vain his swaggering, and his furious calls,
The frightened harp strings answer back in "squalls."
When "must" and "shall" stand at the poet's back,
And drive him on with many a lusty whack,
What chance for any melody divine
To voice itself in smoothly flowing line?
The strident organ, to Italians dear,
Is what the listeners are doomed to hear.
'Tis not the best, nor what we like, 'tis true,
But when the best is lacking, worse must do.
We looked for Holmes, and Amesbury's bard to come,
But Whittier's not, and Holmes remains at home.
Were they but with us, how the gods we'd thank!
Alas, they're not — Alphonso, turn the crank.

You've seen the country maid, new come to town,
With quiet mien and simple homespun gown;
No beauty's artifice she needs nor knows
By which the parchment skin is turned to rose;
The pearl of nature shines along her face,
And real blushes add their wondrous grace.
A modest blossom — every charm its own —
All that delights the eye, not bought but grown.
But soon the city's cunning tricks are learned,
And honest nature out of doors is turned;
And art comes in, to try with skilful hand
To mend what fashion says is badly planned.
What wondrous transformations then occur!
Arabian Nights grow commonplace to her.
The modiste's scissors and the fashion plate,
In sweet conjunction work her "up to date."

Paris undoes the work of Paradise,
And views its mangling with admiring eyes;
Beflounced, bepanniered, and be — who dare tell?
The country maid blooms out a city belle.
Now home returned, how all the rustics stare,
What comments pass upon her gait and air,
What adjectives set forth her altered state!
All eyes are curious, and some flash with hate.
Can this be she, our little modest maid,
This gorgeous dame, so flauntingly arrayed?
This strange shaped mass of flounces and of fuss,
Whose wondrous outlines shock and startle us?
The mad creation of some crazy dream,
Such as inspires the art of Vinnie Ream.
"And still they gaze, and still their wonder grows,"
That one small dress can carry all those bows.

And some such change, perhaps, the world may deem
Has come across the spirit of *our* dream,
When the grave, staid and solemn Institute
Comes out in worldly style, in party suit,
Forsakes its search in Indian heaps of shell,
To test instead the mollusks of Cassell;
Studies crustacea in their salad state;
Puts Darwin's jelly in a china plate;
Leaves ornithology's hard terms untried,
Enamored with the partridge at its side;
Adopts a glacial theory in a trice,
Choosing 'twixt lemon and vanilla ice;
Plies knife and fork with scarce a moment's stay,
And on to grave conclusions eats its way.
"Is this?" "Is this?" cry people, horrified,
"Is this the Institute, the city's pride?
Are these the men that meet in yonder room,
And sit with faces wrapped in funeral gloom,
Scowling at bugs, and ferns and pickled fish,
That form the common Monday evening's dish?
Are these the calls of science, this the quest
Which men push on with such a wondrous zest?
Is this the way they burn the midnight oil,
And talk to-morrow of their heavy toil?
The secret's out; this jovial throng, to-night,
With merry laugh and boundless appetite,
Careless of isms and of theories deep,
Toying with viands that will murder sleep,

In reckless mood have let the truth slip out,
And told us what the Institute's about.
Its genealogies and dusty lore,
Its curious specimens of the days of yore,
Its dredging, delving, these are all a blind;
There's something very different behind.
Perhaps for gravity it *used* to strive,
It studies jollity at twenty-five."

So think the thoughtless, but the wiser sight
Sees other meaning in our mirth to-night.
The hour of pleasure is the hour of rest,
That sends us back to work with keener zest.
So, when the factory bell, at evening time,
Rings out upon the air its welcome chime,
And, quick responsive to its clanging beat,
There comes the answer of a hundred feet,
The merry jest goes round, and cheerful word,
With happy laughter all the crowd is stirred.
Forgotten for a while the thunderous din
That roared and rattled in the workshop grim,
Tense nerves relax, gaunt want forgets its pain,
And childhood's dreams come drifting back again;
The breath of country fields, the garden's sweets,
Seem to sift through the smoke of city streets;
For one brief hour the present fades away,
While old time splendors glorify the day.
And then toil takes again its heavy load,
To travel on along the dusty road,
Renewed and gladdened by the restful change
That gave to hope and thought a wider range.
So here we stand to-night with bows unbent;
To-morrow sees us all on work intent.
And, as the mirthful moments fade away
Before the coming of the toilsome day,
The earnest future, glowing in their light,
Brightens before our cheered and quickened sight.

We look to-night a quarter century back,
And mark the lustre of the shining track
Left by the footsteps of illustrious sires,
Who kindled long ago these altar fires.
Amid the changes of a changing age
Decay's not written on *our* history's page.

Empires have risen, tumbled to their fall,
The throne of power been shrouded with the pall.
Fortune's swift turning wheel brought various fate,
To mighty interests in church and state;
But, midst them all, secure against their shock,
The Institute, safe founded on a rock,
Withstands the tempest and the billows' rage,
And gives no sign of weakness or of age.
E'en here at home, what changing scenes and powers
Have marked the passage of those flying hours!
The cherished city of our love and pride,
Sitting so softly by the restless tide,
Keeps only memories of that earlier time
That brought the treasures of the Orient clime,
Its silks, and fragrant gums, and spices sweet,
To lay in willing tribute at her feet,
And, o'er the common labor of the day,
Throw the weird splendors of the far Cathay;
No more her ships come from the golden quest,
Fanned by rich gales from Araby the Blest,
And other works employ the busy hands,
That gather gold no more from India's Sands.
But naught of this disturbs *our* prosperous state,
Nor checks our progress, ever growing great;
Still! star-eyed Science, running to and fro,
Eager to find whatever man may know,
Hunting in upper and in nether world,
Mining in shell-heaps or through star-rack whirled,
Contented here pulls off her seven leagued boot,
And makes her home the ESSEX INSTITUTE.
See, at our hearthstone, how she sits, and sends
Her pupils forth to serve her various ends,—
Some to dig Indians, some the sea to dredge,
Some to filch treasures from the rocky ledge,
Some to hunt bugs and spear them with a pin,
As though bug-murder could not be a sin;
And when, returning home with various hap,
Their spoils they empty in her ample lap,
She looks them o'er, and sorting out, she sends
The second best to "corresponding" friends;
The first and rarest for *our* use she "mounts,"
To be of knowledge the perennial founts.
Nor this alone — for, lo! on happy nights,
'Midst breathless hush and half-extinguished lights,

Her magic screens with weird enchantments glow,
And things of beauty from above, below,
Snatched from the garden, gathered from the lea,
Brought from the hill-side, borrowed from the sea,
Lifted from nothingness to ample size,
Pass in review before our wondering eyes.
All lands come trooping with their tribute—meet
To lay in offering at their Mistress' feet;
From the far realms where endless winter reigns,
From tropic forests and from summer plains,
There comes some gift of leaf, or life, or flower,
To swell the wonders of th' enchanted hour;
Each form of marvel on this teeming earth,
The shaping crystal and the insect's birth,
The golden argosies that sail the air
And freights of life to waiting blossoms bear;—
Each comes, obedient to the Mistress' call,
And paints itself upon the canvas wall;
And over all, the magic work to crown,
The nimble ether of the skies comes down,
And subtile light waves, tortured for their name,
Write out their autographs in rainbow flame.

These are our claims, good friends, to love and praise,
For this to-night, each heart its homage pays,
For this the tables groan, and flowers' perfume
Beats out in waves of fragrance through the room.
Your presence cheers us; may its kindly power
Be felt for good in many a coming hour!
You've proved our *feasts*, now give our *fasts* a try,
They'll be nutritious, if a little dry,
And the old mother, gathering to her heart
More lusty children, take another start.
So will the century, rounding to the sphere,
See gain and growth with each completed year,
And to the glorious hundredth festival,
We bid with hearty welcome one and all.

STEPHEN M. ALLEN of Boston being called upon responded as follows:—

MR. PRESIDENT:—I know of no position more embarrassing to a lay member of a scientific society, who may be expected to say something on an occasion like this, than to find himself surrounded by both natural and professional scientists, whose experience and wits have been sharpened to the highest point by the study and acquisition of all kinds of scientific knowledge. I think, sir, that we have a slim chance, in such an audience, of expressing ourselves so as to appear either easy or interesting. A professional man has the advantage, for if he ever finds himself embarrassed in speaking, either in public or private, he can at once retire under the umbrella of his specialty and escape from the effects of any passing shower of general criticism. Should he be a geologist, he has but to commence on ichthyolites, oolites, sienites and granites, and his listener will never attempt to storm his fortress. If he be a physician, he can do the same thing, only substituting the tibia, fibula, scapula and aorta. The chemist fares equally well in his defence, when diving into the great sea of oxygen, nitrogen, and sometimes hydrogen, with a profusion of alternatives of nitrates, sulphates and bi-sulphates ever ready; while the mathematician or the astronomer can at once successfully and defiantly flee to the realms of space, talking of revolving worlds, of spheres and hemispheres, of constellations and occultations; and if sometimes it reaches aberrations, his listener, through a want of technical knowledge, may not be the wiser. But it is not so with the layman. To be at all happy in his position, he must have seen and known much of many things; in fact, often it seems as though he was expected to have been everywhere and possessed himself of all knowledge, without which he is reckoned uncultivated and behind the times. He is expected perhaps to consider himself fortunate, if perchance sometimes he is needed as a flux or is honored as the slag of science. But, sir, your Institute is progressing in the right direction. It is searching and reaching practical knowledge at every step, gathering with both gentle and strong hands the truths which belong especially to the present moment, as well as what was in the past and which must be in the great future. Your coöperators chosen from the gentler sex will prove beyond question, a tower of strength in aiding and sustaining the genius and integrity of your present success, as well as in perpetuating your future usefulness and glory. With the most hearty thanks for your invitation to be present to-night and the best wishes for your future prosperity, I will close with the following sentiment:—

> The Scientist and Mechanic: May the former ever be as ready to loan the Umbrella of his Specialty to his lay-friends in a storm, as the latter is to make and present new ones, when the old shall have been worn out.

Able speeches were also made by the Hon. JOHN E. SANFORD, speaker of the Massachusetts House of Representatives, and by Rev. E. C. BOLLES of Salem, of which unfortunately no reports could be obtained.

SELECTIONS FROM LETTERS RECEIVED.

WORCESTER, Feb. 26, 1873.

My Dear Sir:

In behalf of the American Antiquarian Society and personally, I have the honor to thank the officers of the Essex Institute for the invitation to unite with them in celebrating the 25th anniversary of the organization of the Institute on the 5th of March next. But I regret to say that I cannot have the pleasure of attending. Yet I offer the cordial congratulations of the American Antiquarian Society that the Essex Institute, always respected as a leader in scientific inquiry, is now more rapidly growing in strength and usefulness.

Very respectfully yours,
STEPHEN SALISBURY.
President of American Antiquarian Society

DR. HENRY WHEATLAND, for the committee of the Essex Institute.

AMESBURY, 2nd 3rd Mo., 1873.

Dear Friend:

I fear it will not be in my power to be present at the celebration of the 25th anniversary of the Essex Institute at Salem on the evening of the 5th inst. As an Essex County man I always look upon the Institute as an honor to the county. Apart from its interest in a scientific point of view its festivals and excursions have exerted a very genial and social influence. Thanking the officers of the Institute for the invitation, I am very truly thy friend,

JOHN G. WHITTIER.

REV. E. S. ATWOOD.

BOSTON, March 1, 1873.

My Dear Sir:

I very deeply regret that an engagement, from which I cannot get clear, will prevent me from accepting your kind and cordial invitation to meet the members of the Essex Institute on the 5th of March. I regret it all the more because I think your Institute is doing important work in the advancement of knowledge. As an old Salem BOY, I glory in everything which indicates the interest in science by matured Salem MEN. I cannot too warmly express my interest in your achievements and your plans. Salem, forever, is the feeling with which I sign myself, Very sincerely yours,

E. P. WHIPPLE.

U. S. COAST SURVEY OFFICE,
Washington, March 4, 1873.

Dear Sir:

But for the public duties which have claimed my attention here your invitation would have been gladly accepted.

Regretting that I cannot be with you at Plummer Hall to-morrow night, to join in the social reunion of the Essex Institute,

I remain, very truly yours,

BENJAMIN PEIRCE.

H. WHEATLAND, Salem, Mass.

RIVERDALE AVENUE,
New York, March 1, 1873.

My Dear Doctor Wheatland:

I most heartily thank you for your kind invitation to attend the Institute anniversary next week. How much I regret that unavoidable duties here stand in the way of its acceptance, I need not say. You remember my deep interest in the objects and meetings of the Institute; and you can well understand that the occasion to which you invite me would prove most attractive. The presence and sight of your fellow laborer [Prof. Packard] in connection with the Institute, the other night, at the dinner at Delmonico's in honor of Tyndall, brought back to me delightful memories of the evenings when we used to gather at the rooms in the Plummer building, and Putnam, Morse, Cooke, Goodell, Emerton, Johnson, *et alios*, alas! Peabody, Huntington, Davis, possibly others gone hence, were choice spirits in our discussions. These are memories deeply cherished still; and I count it not the least among the privileges of my residence in old Salem, to have been associated with such as these, much more to my own advantage as was the connection, than it could have proved to my fellow members of the Institute.

I again thank you, my old friend, for your courtesy, and beg to express the wish that your celebration, in all its features of instruction and good fellowship, may prove all that you desire.

Believe me always, faithfully your friend,

GEORGE D. WILDES.

NEW HAVEN, CONN., FEB. 17, 1878.

Dear Sir:

I have to thank you, and through you, the Committee of Arrangements, for the kind invitation I have just received to a banquet on the evening of March 5th.

I should take the greatest pleasure in being present, if I could so arrange as to leave home at that time, but as I fear that will be impossible, I am obliged to forego the pleasure, and so gratefully decline the honor.

The continued prosperity of the Essex Institute is a matter of satisfaction to all the naturalists of the country, and it is to be hoped, and indeed expected, that its brilliant example will be followed in many parts of the land.

Anything that will show to our money-loving nation that there is a truer and higher expression of value than the sign of the dollar, $, is a thing which will in the end advance the whole people in their ideas of essential and permanent usefulness.

Even the professional advocates of a purer and more unselfish practice of religion will always find a great gain to themselves and their cause from the careful study of Natural History, for only in this way can they learn how it is that all natural phenomena, "creeping things and flying fowl,—fruitful trees and all cedars" fulfil the design of the great Creator, and give back a clear and unmistakable response to the

Psalmist's invitation: "Bless the Lord, all his works, in all places of his dominion."

I am, with deep regret that I can not be with you,

Yours very truly,

DANIEL C. EATON.

D. B. Hagar, Esq., Member of Committee of Arrangements for the 25th Anniversary of Essex Institute.

BROOKLINE, Feb. 20, 1873.

My Dear Sir:

Yours of the 18th inst., has this moment reached me. It is full of temptation. It would give me real pleasure to be with the Essex Institute at their celebration, and to bear witness to their great success in the cause to which their labors are devoted.

But I am compelled to deny myself, and can only offer them my grateful acknowledgments of their kind invitation, with my cordial wishes for their continued success and prosperity.

Believe me, dear sir, with great regard, very faithfully yours,

ROBT. C. WINTHROP.

ABNER C. GOODELL, JR., Esq., Vice Pres't.

BOSTON, Feb. 28, 1873.

My Dear Sir:

Illness will deprive me of the pleasure of accepting your kind invitation to the 25th anniversary of the organization of the Essex Institute. I rejoice that Dr. Wheatland will witness it.

Glorious old Essex is rich in great names some of which yet wait, and can afford to wait, for historical justice. In the day when History shall supplement mere Annals, the portrait of Cutler, the minister of Hamilton, which now adorns the walls of the Institute as a man of local distinction, will, with that of Dane, the Beverly lawyer, be elevated to a chief place among our national portraits, and the names of Manasseh Cutler and Nathan Dane be as household words throughout the land for all time. Their joint work, the Ordinance of 1787, July 13—some months prior to the adoption of our present Constitution, is hardly second in importance to the Declaration of Independence. Except the Constitution it is perhaps the most important instrument among the fundamental acts of the country, for it established the principles of civil and religious liberty as the organic basis of all governments and laws in the northwest. It was "the cloud by day and the pillar of fire by night," warding off slavery and barbarism, and securing the primeval waste of forest and prairie of the northwest for the children of the north Atlantic states, who, like their fathers, should demonstrate the capacity of man for self-government. It was this civilization that, when slavery, with the warm breath of old world despotism, was against us, gave us Lincoln's Proclamation of Emancipation; it blotted out slavery; it vindicated the Declaration of Independence; and saved the nation. Let the nations love and reverence the names of Cutler and Dane. They

> "—— heard the tread of pioneers
> Of nations yet to be;
> The first low wash of waves where soon
> Should roll a human sea."

Yours, sincerely,

J. WINGATE THORNTON.

ABNER C. GOODELL, Esq., V. P., Chairman of the Com. of Arrangements.

The celebration as a whole must be considered as an eminent success. The evening was propitious, the arrangements well carried out in all their details, the speeches thoughtful and interesting, and no untoward incident marred the enjoyment of the festival from its beginning to the close. The occasion will long be remembered by those who were so fortunate as to be present, as a fitting celebration of the twenty-fifth anniversary of the Essex Institute.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., APRIL AND MAY, 1873. NO. 4.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, APRIL 14, 1873.

Meeting this evening. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From Stephen M. Allen, Boston, March 27, 28; C. Alice Baker, Cambridge, April 6; Henry Barnard, Hartford, March 17; Oliver N. Bryan, Marshall Hall P.O., Ind., March 17; A. Crosby, Salem, April 10; S. C. Gould, Manchester, New Hampshire, March 21, 31; S. A. Green, Boston, March 29; George Haskell, Ipswich, April 8; D Webster King, Boston, April 8, 10; G. B. Loring, Salem, April 3; A. A. Scott, Saugus Centre, April 8; James Usher, New York, March 17; Marshall P. Wilder, Boston, April 8; Charles V. Woerd, Waltham, April 10, 12; American College of Heraldry, New York, April 3; Bern, Die Naturforschende Gesellschaft; New York Genealogical and Biographical Society, New York, March 24, 29, April 5; Ohio Historical and Philosophical Society, Cincinnati, March 15.

THE LIBRARIAN reported the following additions:—

By Donation.

ALLEN, STEPHEN M., of Boston. Proceedings of the Laying of the Corner Stone of the Standish Monument on Captain's Hill, Duxbury, Oct. 7, 1872.

Butler, B. F., of U. S. House of Representatives. Bingham's Speech in the U. S. H. R., Feb. 26, 1873. Butler's Speech in U. S. H. R., Feb. 27, 1873.

Cleaveland, N., of Topsfield, Mass. Political Pamphlets, 2 vols., 8vo. Miscellaneous Sermons, 2 vols., 8vo. Religious Pamphlets, 2 vols., 8vo. Miscellany, 2 vols., 8vo. The Psalms of David, by I. Watts, 1 vol., 12mo, 1786. Massachusetts Register, 1809, 1 vol., 16mo. Psalms, 1 vol. 12mo.

Green, S. A., of Boston, Mass. Miscellaneous pamphlets, 11.

Massachusetts Horticultural Society. Transactions of, for 1872.

Osgood, Alfred, of Newburyport, Mass. Annual Report of the School Committee of Newburyport for 1872. Report of the Directors of the Public Library of Newburyport, 1872.

Palfray, C. W. Miscellaneous pamphlets, 35.

Potter, Rev. E. N., of Schenectady, New York. Proceedings at the Inauguration of the President of Union College, 1871-72.

Thurston, C. Myrick. Genealogy of the Thurstons and Pitmans of Rhode Island. 1 vol., 8vo. New York, 1865.

U. S. Patent Office of Washington, D. C. Official Gazette, March 4, 11, 18, 1873.

By Exchange.

Archiv für Anthropologie, Band v, Heft iv, 1872.

Bibliotheque Universelle et Revue Suisse. Archives des Sciences Physiques et Naturelles, Dec., 1872, Jan., 1873.

Geological Survey of Canada. Report of Progress for 1871-72.

Natural History Society of Montreal. The Canadian Naturalist, Vol. vii, No. 1.

Philadelphia Academy of Natural Sciences, Proceedings of the. Oct., Nov., Dec., 1872.

State Historical Society of Iowa. The Annals of Iowa for January, 1873.

Publishers. American Naturalist. Essex County Mercury. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Sailors' Magazine and Seamen's Friend. Salem Observer. Silliman's Journal. Western Lancet.

Among the donations announced may be specified a Pocket Bible more than two hundred years old, from Miss Mary C. Anderson, and bearing the imprint of 1658. Not only is the title page illustrated with a nicely executed steel engraving quite creditable to the period, but the covers and gilt edges are ornamented with an elaborateness rarely equalled at the present day. The inscriptions show the transmission from one person and generation to another. From Mrs. Dolearne to Eliza Whetstone; from Eliza Whetstone to Peter Clarke; from the widow of Peter Clarke, in 1805, to John Jones Gascoigne Clarke; from the latter's administrator to Deborah Fairfax Anderson, Aug. 9, 1838, and from the latter at her death, March 23, 1841, to her daughter, Mary Clarke Anderson.

From NEHEMIAH CLEAVELAND, Esq., of Topsfield, an ancient stand for a christening basin. It is made of iron, of a rather rude style of construction, and was found under the pulpit when the third Topsfield meeting-house was taken down. It was no doubt used in the second meeting-house built in 1703, and may have belonged to the first house.

From Mr. OLIVER N. BRYAN, of Marshall Hall P. O., Maryland, some relics of the tomb of Mrs. Deborah Fairfax, situated upon the banks of the Potomac, in a most lovely spot, a beautiful grove composed chiefly of white oaks, elevated above the river about fifty feet, commanding a beautiful view down seven and up five miles, overlooking a large portion of Prince George and Charles Counties, Maryland. Mrs. Deborah Fairfax was the daughter of Francis and Deborah (Gedney) Clarke of Salem, and was living in the house on the corner of Essex and North streets, on the site of which now stands the Shepard Block, when William Fairfax came to Salem as collector of the port, with his family, and lived in the house on the corner of Cambridge and Essex streets, taken down the past season to erect on its site a more eligible mansion.* The wife of Mr. Fairfax died in 1731; he afterwards married Miss Clarke and in 1734 removed to Virginia by invitation of his cousin Thomas, the sixth Lord Fairfax, to be the superintendent of the estates that had lately come into his possession through his mother, who was Catherine, daughter of Lord Culpepper.

From Miss EUNICE RICHARDSON, specimens of old continental currency.

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*See Bulletin of Institute, Vol. iv, p. 62.

Dr. A. S. **Packard**, Jr., exhibited a large series of photographs of scenery in Colorado and Montana Territories taken by Mr. A. H. Jackson, under the auspices of the United States Geological Survey of the Territories, Dr. F. V. Hayden geologist. They were in two sets, and comprised some of the finest views in the National Yellowstone Park and Colorado Territory. From them one could obtain a very clear idea of the Geyser region which has been studied and mapped out by the Survey; of the springs in course of eruption, and of the falls and basin of the Yellowstone. He gave an account of the supposed origin of these extensive hot springs of which several thousand are supposed to exist. He also alluded to the value and interest of the discoveries made by Dr. Hayden in the west for a period of nearly fifteen years.

STONE KNIVES.

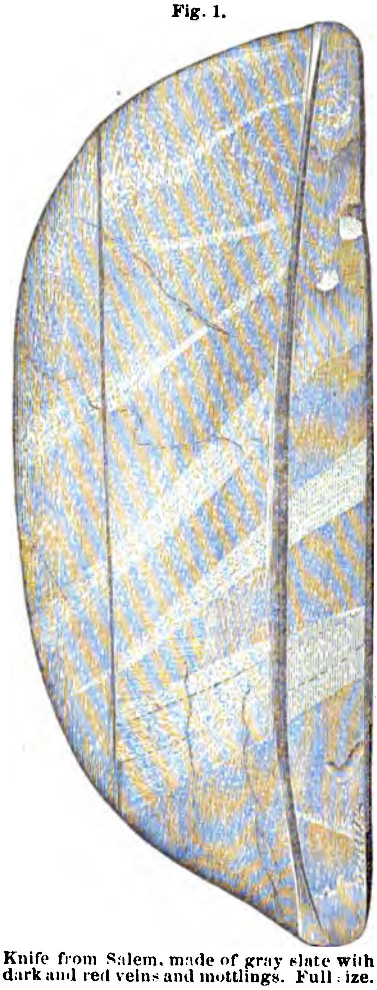
Mr. F. W. **Putnam** occupied the greater portion of the evening with an account of the various forms of cutting instruments made of stone, and classed by archæologists under the general head of knives. A large number of specimens were exhibited, showing the different forms so far as they were represented by specimens in the Museum of the Peabody Academy of Science.

Knives or cutting instruments of various shapes and degrees of perfection have been found in more or less abundance in all parts of the world where stone implements have been collected and studied. Many of these cutting implements are simple flakes of flint or other stone; in fact any stone with a sharpened edge attained either by chipping or grinding, and of such a form as to show that it was not intended for use as a skin scraper, dagger, spearhead, arrowhead, small axe, or other similar implement, is classed under the head of knives; but while various stones, in many cases showing hardly any work upon them with the exception of providing a cutting edge, are thus brought into the group, it must not be taken for granted that all the stone knives of the prehistoric races were of this rude character.

Many beautiful cutting implements have been found in various countries, especially in North America. Schoolcraft, in his extended work on the Indian tribes, figures several fine specimens, notably the one represented on plate 45, figures 1 to 3 (vol. ii), found at Hartford, Washington County, N. Y., which he states to be carved from a piece of green serpentine. This knife is somewhat sickle shaped, five and three-quarters inches long, with a curved triangular blade descending from a well formed rounded handle. Schoolcraft also figures (vol. ii, pl. 49, fig. 4) a cutting implement with a blade five and three-quarters inches long by an inch in width. The figure shows a thickened portion answering for a back or handle. This specimen was found in Genesee Co., N. Y. The drawing is, however, very poorly executed and the description is so brief as to leave us in doubt as to the exact character of the implement. The specimen figured on his plate 50, figures 5 and 6 (vol. ii), under the title of "fragment of a blade of a battle-axe," and described as made of silicious slate, is far too thin and fragile an implement for a battle-axe, and is more likely another form of slate knife, perhaps having two symmetrical blades, through the centre of which (the figure shows a broken groove, which may represent a hole drilled through the centre of the blades) a wooden handle was inserted.

Squier and Davis in their work on the "Ancient Monuments of the Mississippi Valley," comprising the first of the splendid series of monuments in honor to James Smithson, under the title of the "Smithsonian Contributions to Knowledge," p. 216, give a small woodcut of a semilunar shaped knife, which they state is a form "occasionally found in the Eastern states. They are sometimes composed of slate, and are of various sizes, often measuring five or six inches in length. They are well adapted for flaying animals, and other analogous purposes." Their figure represents a knife of the same shape as the one here engraved (Fig. 1).

Fig. 1.

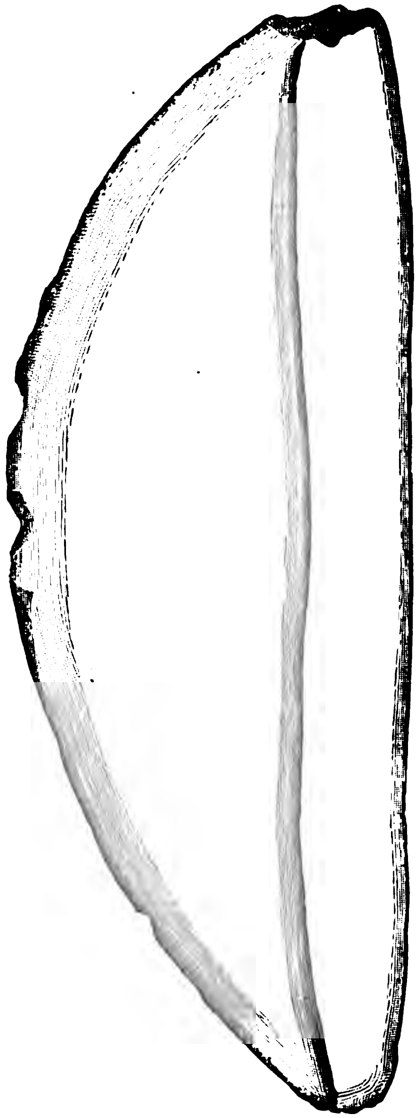


Knife from Salem, made of gray slate with dark and red veins and mottlings. Full size.

Of these semilunar shaped knives I have seen quite a number of specimens in various collections, but thus far all, as stated by Squier and Davis, have been from the Eastern states. In the Peabody Museum of Archæology, at Cambridge, there are several of this form, one of which is about eight inches long and is labelled "Paring Knife. Amoskeag Falls, 1795." Two other knives of this shape are in the Abbott Collection of the Peabody Academy of Science. These were found near Trenton, New Jersey, and by the kindness of Dr. Abbott I am able to use the woodcut representing one of them (fig. 2) in advance of its appearance in his work on the "Stone Age in New Jersey," for the purpose of showing its great resemblance to the specimens from Essex County, of which there are two in the Academy Museum. The one represented here as figure 1 is the more beautifully finished and perfect of the two. It was found in Salem and placed in the Museum of the East India Marine Society. It is not quite five inches in length and is a little less than two inches in greatest depth of blade and back. The back is about half an inch in depth and a little over a quarter of an inch in width at the centre; narrowing at the ends; perfectly flat above. The blade is one-fifth of an inch thick along the under side of the thick back; it is gradually thinned out to the cutting edge all round, which is only one-tenth of an inch thick about one-fifth of an inch from its outer margin, which is evenly and nicely brought to a sharp cutting edge. The engraving shows the shape of the knife better than words will describe it. It will be noticed that the blade is slightly more pointed at one extreme than at the other. The material is a gray slate having several fine veins of a harder substance (quartz?) as shown in the engraving; it is quite ornamented with several dark wavy lines, light streaks and bands, and a number of irregular wavy lines of a red mineral running in all directions over the surface, but not indicated in the engraving.

Another specimen, also received by the Academy from the East India Marine Society Museum, was found on the farm in Danvers formerly owned by Governor Endicott. This specimen consists of about one-half of the knife, and was evidently, when perfect, about six inches long and two and a quarter deep. It was made of a slate very much like the Salem specimen, but without the dark and red veins and mottlings.

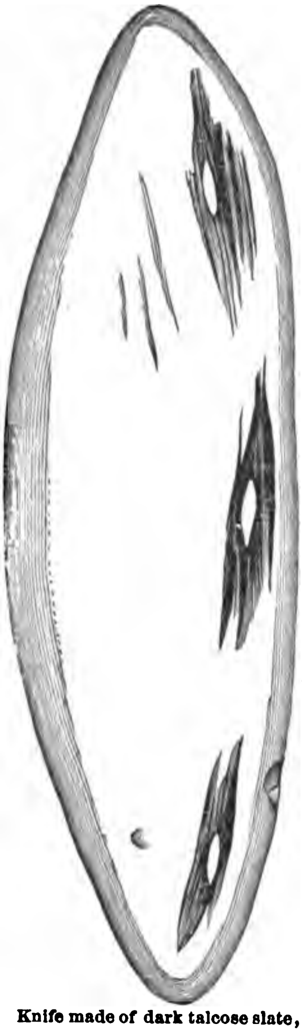
Fig. 2.



Knife made of light clay slate from Trenton, New Jersey. Full size.

Among the many interesting specimens secured for the Museum of the Academy, by Mr. John H. Sears, is a knife of dark talcose slate which is unlike any other that I have seen. The specimen is represented as figure 3. It was found near the church in Putnamville (Danvers) and is thus of marked interest to us as a relic from Essex County. It is slightly over five inches in length, and about one and one-half inches in depth at its centre. It is worked to a rounded point at each end, as shown by the engraving, and the smooth cutting edge is from point to point. The greatest thickness of the blade is one-fifth of an inch. The back of the knife is ground off to quite a thin edge, but evidently was never sharpened to form a cutting edge, though the back is so thin as to render its being held in the hand an uncomfortable matter while using the knife in this way, and the three holes that have been rudely cut, apparently by scraping backwards and forwards with a pointed stone, on both sides, until a hole was made, are evidence that the knife was mounted on a handle by passing bands through the holes and around the handle,

Fig. 3.



Knife made of dark talcose slate, from Putnamville. Full size.

which was probably grooved along its under side to fit over the sharp back of the knife. In common with the other slate knives, this specimen was finished with care and is perfectly smooth and well sharpened along its cutting edge.

Evans, in his instructive work on the "Ancient Stone Implements of Great Britian," mentions (p. 311) that in some Esquimaux knives the blade is tied to a wooden back by a cord which *passes through a hole in the blade.*

It would thus seem that our New England Indians, for to them I think we must look as the makers and owners of the knives I have specially described, were not satisfied with using simple flakes of stone and broken arrow and spear heads for knives, but that with them as with us to-day there were many, and often elaborate, styles of this most useful implement, and who can say that to possess a good knife was not as much the ambition of the men of the departed race as it is with those who have succeeded them?

Messrs. Charles D. Styles, John H. Derby, George F. Breed, Samuel Edson Cassino and Matthew Robson, all of Salem, and John G. Barker of Lynn, were duly elected resident members.

A committee, consisting of Messrs. John Robinson, James Kimball, E. S. Atwood and Caleb Cooke, was appointed to nominate officers to be balloted for at the annual meeting. The president and secretary were afterwards added to the committee.

Adjourned.

REGULAR MEETING, MONDAY, MAY 5, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. In the absence of the SECRETARY, Dr. WILLIAM NEILSON was requested to act. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Stephen M. Allen, Boston, April 22; Jacob Batchelder, Lynn, April 29; T. T. Bouvé, Boston, March 21; S. P. Boynton, Lynn, April 29, May 1; George Derby, Boston, April 29; Samuel A. Drake, Boston, April 19; James H. Emerton, Boston, March 14; J. C. Holmes, Detroit, Mich., April 12; E. Rupert, Boston, April 26, William H. Rush, Chelsea, April 23; Henry Saltonstall, Boston, April 14; N. Vickary, Lynn, April 30; Charles V. Woerd, Waltham, April 18; William H. Yeomans, Columbia, Conn., May 3; American Antiquarian Society, April 26; American Geographical Society, April 30; Basel, Naturforschende Gesellschaft, August 12, 1872; Boston Public Library, April 23; Buffalo Society of Natural Sciences, April 17; Chicago Public Library, April 23; New Jersey Historical Society, April 21; New York Lyceum of Natural History, April 22; University of Wisconsin, Madison, April 30.

Mr. JOHN ROBINSON gave an account of the floral progress of the year, noticing the period of the opening of the flowers of several of the native plants and comparing the same with that of previous seasons.

He mentioned the finding, by Mr. C. E. Faxon of Cambridge, of a fern (*Aspidium munitum*), hitherto unknown in the United States, but known in the West India islands and other parts of the tropics; also that *Asplenium ebenoides*, only found in Philadelphia some years since, had been noticed in Alabama, growing with *Asplenium ebeneum* and *Camptosorus* as at the Philadelphia locality, thereby adding to the weight of the theory that it was a hybrid between the latter two.

He also said that, without doubt, if thorough search be made at the south, many plants not known in our flora would be found, many difficulties having prevented the tourist and scientist from visiting that region at the proper season of the year to collect the best specimens.

Rev. E. C. **Bolles** mentioned the occurrence at Swampscott, on the Stetson farm, very near the railroad, of one of the most beautiful of the microscopic Algæ, the *Batrachospermum moniliforme*. This plant requires very pure running water; and it closely invests the stones in little streams, moving its clusters of soft green threads very gracefully with the flowing of the brook. Under a lens each filament is seen to consist of a central thread, around which, at regular intervals, are whorls of other threads at right angles to the first, so that the whole appears like minute circular brushes, similar to those used for cleaning the flues of a chimney and strung like beads some distance apart. The threads are necklaces of globular cells, and the spores are to be found in a cluster near the centre of each whorl. These plants are with difficulty preserved, as they change color and cease to exhibit this peculiar arrangement when pressed on paper. They are usually put up for the microscope in glycerine jelly.

Mr. F. W. **Putnam** mentioned having noticed the appearance on April 3rd, of the common or white-bellied swallow, *Tachycincta bicolor*.

Charles A. Carlton of Salem was elected a resident member.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 5. SALEM, MASS., MAY, 1873. No. 5.

One Dollar a Year in Advance. 10 Cents a Single Copy.

ANNUAL MEETING, WEDNESDAY, MAY 14, 1873.

According to the notification, the meeting was held at 3 P. M. The PRESIDENT in the chair. Records read.

The annual reports of the officers and of the curators were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR,

exhibiting a satisfactory condition of affairs and the progress made, during the interval, in the promotion of the objects of the institution, has been compiled.

MEMBERS.—Changes occur in the list of associates by the addition of new names, and the withdrawal of some by resignation, removal from the county, or by death. In this connection, notices of nine of the resident members, who have deceased within the year, are inserted.

B. R. Allen. Scarcely had two or three weeks elapsed, after our last annual gathering, ere the First Congregational Church in Marblehead was called to part with a beloved minister, Rev. B. R. Allen. He was born in Newport, Rhode Island, June 2, 1805, ordained in Marblehead in 1854 and since that time has resided in that town highly esteemed and revered. He joined the Institute several years since, has attended some of its meetings and was interested in its objects. He died June 2, 1872.

Henry Curwen, son of Samuel R. and Mary L. (Holman) Curwen, died July 13, 1872, aged 25; he early associated himself with the Institute. His duties as a clerk in one of our large business houses precluded him from being a very active member.

Brown Emerson. On Thursday evening, July 25, 1872, the South church in this city lost by death the aged and venerable senior Pastor, Rev. Brown Emerson, D. D., who had been connected with them in this holy bond of brotherhood for more than two-thirds of a century. He was the son of John and Catherine (Eaton) Emerson and was born at Ashby in this state January 8, 1778; graduated at Dartmouth College in 1802, and was ordained April 24, 1805, as colleague with the Rev. Daniel Hopkins, D.D., whose daughter Mary he married Oct. 29, 1806, a lady of uncommonly excellent traits of character, who survived until April 4, 1866, sustaining the happiest married relations for a period of nearly sixty years. Dr. Emerson was a person of noble presence, tall, erect, and of fine proportions, courteous and genial in his manners. His patriarchal appearance in his later years will long be remembered.

William S. Cook, son of John and Eliza A. (Leighton) Cook, died December 7, 1872, aged 28.

William Silver, son of James and Susan (Howard) Silver, died at Salem, January 16, 1873, aged 64. In early life a master mariner; afterwards a merchant. By his death, Salem loses another link in the chain which connects it with that period in its history when the sails of its merchantmen whitened every sea, and its merchants were known throughout the commercial world. He retired from all his trusts successful and with a proud record, and as a citizen was widely known and respected.

Henry C. Perkins. On Saturday, February 2, 1873, our neighboring city of Newburyport was pained by the announcement of the sudden decease of one of her most eminent physicians, Henry C. Perkins, M. D.; he was the son of the late Thomas Perkins and was born in that place, Nov. 13, 1804; graduated at Harvard college in 1824, and after the usual medical tuition located in the place of his birth and resided there until his decease, devoting the leisure he was enabled to obtain from an extensive and successful practice to scientific investigations, in which he took much pleasure and was an ardent and zealous worker. Rev. Dr. Spalding of Newburyport has kindly consented to prepare a memorial to be read at some future meeting with a view to its publication in the "Historical Collections."

Abraham F. Bosson, of Salem, died February 21, 1873, aged 61; a son of Thaddeus and Abigail (Fowler) Bosson. His interest in the Institute centred in the horticultural department; he was a very zealous and devoted cultivator of the choicest flowers and fruit and liberally contributed to the horticultural exhibitions given under the auspices of the Institute.

John Chapman, the senior editor of the Salem Register, died on Saturday, April 19, 1873, having been able to perform his usual duties in the office until within a few weeks of his decease, when he was stricken by a disease which soon proved fatal. He was son of John and Ruth

(Henfield) Chapman and was born in this city, Sept. 4, 1793, and was consequently on the verge of fourscore. He entered the office of the Register in 1807, having been engaged in the duties of a printer, nearly as many years as his venerated pastor, who died a few months previous, had occupied the pulpit of the South church in this city. Having held many offices of trust and being much in public life, few citizens were so generally known or will be so much missed.

Timothy Ropes died April 25, 1873, aged 75; son of Timothy and Sarah (Holmes) Ropes. In early life he made several voyages to India; afterwards became a dealer in crockery and hardware. He was very fond of horticultural pursuits and was a constant contributor of flowers and fruit to the horticultural exhibitions, especially to those held some twenty or thirty years since.

MEETINGS.—Three field meetings have been held during the season; first, at Middleton, June 12, 1872, by invitation of Mr. Simon F. Esty, who tendered the use of his grounds on the border of "Forest Lake," formerly known as the Great Pond, as the place of rendezvous for the day. At the meeting in the church, remarks were made and resolutions passed to the memory of Dr. Wm. Stimpson; Mr. David Stiles presented some historical notices of Middleton; D. J. Tapley of Danvers exhibited a curious Indian relic found by Mr. Seneca Ladd of Meredith village, New Hampshire; Mr. James H. Emerton spoke on spiders; Rev. E. C. Bolles on Microscopic Fungi —also Mr. F. W. Putnam, Dr. A. H. Johnson, A. C. Goodell, Jr., Esq., Rev. Mr. Frary and others, made appropriate remarks suggested by the occasion.

The second meeting at Groveland, July 16, 1872, by invitation of Dr. Jeremiah Spofford. An object of special interest was the new iron bridge connecting the town with Haverhill. The new academy building, which was the rendezvous of the day, is also deserving of honorable mention. It was recently built, (mainly through the efforts of Dr. Spofford), on the site of the former building destroyed by fire a few years since. At the meeting Dr. Spofford gave a very interesting sketch of the history of the academy; Prof. E. S. Morse spoke on the "Frog Spittle" *Ptyelus lineatus*, and described the habits of this curious insect; James H. Emerton mentioned several cases of protective colors and habits in spiders which he had seen during the morning walk; Messrs. Abner J. Phipps, agent of the State Board of Education, D. B. Hagar of the State Normal School, Salem, S. C. Beane, E. C. Bolles, LeRoy F. Griffin and others, made interesting remarks.

The third, at Annisquam, on Thursday, Aug. 8, 1872. The pleasant summer's day so congenial and appropriate for a visit to the seashore induced many to accompany the Institute on this excursion to the rock-bound coast of Cape Ann. In the afternoon F. W. Putnam spoke of the shell heaps which he had visited; also gave an account of the development of the skate's egg, the cases which contained the embryo being frequently found cast upon the beaches; Rev. W. E. Coffin of Orange, formerly a pastor of this church, and J. J. Babson, gave interesting historical sketches of this parish; remarks were made by Messrs. A. W. Dodge, L. J. Livermore, James Davis, C. E. Barnes, Addison Davis, and others.

Evening meetings have been held at the rooms, usually on the first and third Monday evenings of each month except on those in June, July, August and September. At these meetings many valuable communications have been presented, and abstracts have been printed in the BULLETIN or reserved for the "Historical Collections;" John Robinson, on our early native plants, with a floral calendar kept by one of our young and enthusiastic collectors, noting the blooming of some of the spring flowers for several years past; also a paper on ferneries, how to make them and what to put in them; George H. Devereux, on the origin of surnames; a catalogue of the mammals of Florida by C. J. Maynard, with notes on their habits, distribution, etc.; A. S. Packard, an account of recent explorations of St. George's Bank in the U. S. C. S. Steamer Bache; on the glacial phenomena of northeastern America compared with those of Europe; F. W. Putnam, on ancient Indian carving; E. S. Atwood gave an account and read extracts from a journal, of a journey to Philadelphia by the late Rev. B. Emerson, some fifty years since; James H. Emerton, on worms of the genus Nais; Stephen M. Allen, on the ancient and modern theories of light, heat and color; Harold Herrick of New York, a partial catalogue of the birds of Grand Menan.

In this connection it may be deemed appropriate to allude briefly to the meeting, March 5, 1873, commemorative of the twenty-fifth anniversary of the organization of the Institute. On this occasion were present His Excellency the Governor, the President of the Senate, the Speaker of the House, and many other distinguished persons.

LECTURES.—On Wednesday evening, Oct. 16, 1872, Rev. E. C. Bolles commenced a series of eight lectures in Mechanic Hall, Salem, entitled "Eight evenings with the Microscope," and continued on successive Wednesday evenings, except the seventh on Tuesday, Dec. 2, and the eighth on Tuesday, Dec. 9. Mr. Bolles also delivered a lecture before the Peabody Institute in Danvers, one before the Newburyport Lyceum, a course of six lectures in March and April in Odd Fellows Hall, Lynn, and a supplementary on Monday, May 12. A course of five lectures is in course of delivery in Danvers, having begun on Thursday, April 17. The subjects of the above lectures were selected from those delivered in Salem during the past autumn. A course of familiar lectures on microscopical studies commenced in the rooms of the Institute on Monday, April 21, the second on Wednesday, April 30, and the others on successive Wednesday evenings. The above lectures,* which were under the direction of the Institute, were popular and instructive descriptions of the history and construction of the Microscope; and included exhibitions of specimens in the various fields of nature, illustrating by aid of the calcium light the discoveries which the microscope has made. Mr. E. Bicknell assisted Mr. Bolles in the illustrations and managed the lantern.

CONCERTS.—Five concerts have been given by members and friends of the Institute on Thursday evenings commencing with Thursday, March 27, 1873. They were very successful and gave much pleasure and gratification not only to those interested in this pursuit, but to others. To Mr. Charles H. Higbee, for his untiring and assiduous exertions in the attainment of a favorable result, the Institute is greatly indebted.

MUSEUM.—Many valuable specimens have been given during the year; those relating to Natural History, in accordance with previous arrangements, have been deposited with the Trustees of the Peabody Academy of Science; and of the collection in the custody of the trustees it is only necessary to say that the same care is bestowed upon our specimens as is upon their own. Those of an historical character are in the immediate care of the Institute, consisting chiefly of curiosities, relics and early Essex County household chattels. It is desirable that a more systematic arrangement be made, and the curators of that department are requested to consider the propriety of having the same done, at an early date, in an interesting and attractive manner. The visitors to inspect the old frame of the first building for the First Church increase every year.

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* See BULLETIN, Vol. iv, p. 46.

LIBRARY.—The additions during the year have been as follows:—

Donations.

Folios,	15	Pamphlets and Serials,	5,834
Quartos,	30	Almanacs,	57
Octavos,	412		
Duodecimos,	59	Total,	5,891
Sexdecimos,	36	Total of bound volumes,	552
Total,	552	Total of Donations,	6,443

Exchanges.

Quartos,	16	Pamphlets and Serials,	1071
Octavos,	61	Total of bound volumes,	80
Duodecimos,	3		
		Total of Exchanges,	1151
Total,	80	Total of Donations,	6443
		Total,	7594

Of the total number of pamphlets and serials 2,515 were pamphlets, and 4,390 serials.

The donations to the Library for the year have been received from one hundred and twelve individuals and fifteen societies and public bodies.

The exchanges have been received from ninety-one societies and incorporated bodies, of which sixty-eight are foreign.

From the editors of the "American Naturalist" one hundred and thirty-seven serial publications.

FINANCIAL.—The Treasurer's Report shows an increase in the annual income, yet additional means are requisite to enable the Institute to perform in a fitting manner the various duties which the community may reasonably expect.

DEBITS.

Athenæum for rent and Librarian,	$350.00
Salaries, $876.88; Coal, $140.00,	1016.88
Postage and Express, $45.47; Sundries, $49.20,	94.67
Lectures (Bolles), $1251.66; Collecting, $5.75,	1257.41
Gas, $32.40; Goldthwaite and Day, $118.84,	151.24
Insurance, $40.00; Publications, $2200.00,	2240.00
To balance,	202.42

Historical.

G. Southward, $10.00; J. Perley, $86; Books, $7.00,	103.00

Natural History and Horticulture.

J. Perley, $25.00; C. A. Walker, $3.50,	28.50
	$5,444.12

CREDITS.

Dividends Webster Bank, 40.00; Lectures, 1214.57,	$1254.57
Notes and interest,	1586.51
Sundries,	87.38
Athenæum, proportion of coal, janitor, etc.,	145.00
Assessments, $1,200; Publications, $617.18,	1817.18
Balance of last year,	2.48

Historical.

Dividends Naumkeag Bank. $24.00; Michigan Central R. R., $47,	71.00

Natural History and Horticulture.

Dividends Lowell Bleachery, $80.00; P. S. & P. R. R., $20,	100.00

Davis Fund.

Coupons Dixon, Peoria and Hannibal R. R. Bonds,	240.00
Coupons Burlington and Missouri River R. R. Bonds,	140.00
	$5,444.12

PUBLICATIONS.—The BULLETIN has been continued in monthly numbers, giving full reports of the doings of the Institute and abstracts of papers read at the meetings;

this makes an annual volume of some one hundred and sixty pages. Vol. xi, Nos. 2, 3 and 4, of the "Historical Collections," have been printed completing vol. xi.

The SECRETARY announced the following correspondence:—

From Buffalo Society of Natural Sciences, May 12; Buffalo Historical Society, May 10; New York Lyceum of Natural History, May 12.

Also the following letter from Dr. A. H. Johnson was read:—

SALEM, May 14, 1873.

The undersigned regrets that while holding the position of Secretary of the Institute during the past year, he has been able to give but little attention to the duties of the office, which have consequently devolved almost entirely upon its President.

The irregularities connected with the medical profession are incompatible with that regular performance of clerical labor, and punctual attendance upon meetings, which the office properly demands. Therefore, unwilling longer to hold an office whose duties must be left to others to perform; grateful for the kind consideration shown to him during his exceedingly imperfect, although never wilfully neglectful, service; with no abatement of interest in the Institute and its objects, but with the hope to serve it better in some other way, he hereby resigns the office of Home and Recording Secretary of the Essex Institute. Respectfully submitted,

A. H. JOHNSON.

OFFICERS ELECTED

for the year ensuing and until others shall be chosen in their stead:—

President.

HENRY WHEATLAND.

Vice Presidents.

Of History — A. C. GOODELL, JR. *Of Horticulture* — WILLIAM SUTTON.
Of the Arts — D. B. HAGAR. *Of Natural History* — F. W. PUTNAM.

Recording and Home Secretary.

JOHN ROBINSON.

Foreign Secretary.

A. S. PACKARD, JR.

Treasurer.

HENRY WHEATLAND.

Librarian.

WILLIAM P. UPHAM.

Superintendent of the Museum.

CALEB COOKE.

Curators of Historical Department.

W. P. Upham, M. A. Stickney, John Robinson.

Curators of Natural History Department.

H. F. King, G. A. Perkins, William Neilson.

Curators of Horticultural Department.

Caleb Cooke, John Robinson, H. W. Putnam.

Curators of Department of the Arts.

C. H. Higbee, Jas. A. Gillis, Geo. M. Whipple.

Lecture Committee.

Jas. Kimball, Geo. Perkins, Wm. Northey, E. C. Bolles, Joshua Colt, A. H. Johnson.

Finance Committee.

John C. Lee, Richard S. Rogers, Jas. Upton, Geo. D. Phippen.

Field Meeting Committee.

A. W. Dodge, E. N. Walton, Caleb Cooke, N. A. Horton, Alfred Osgood.

Library Committee.

J. G. Waters, Alpheus Crosby, E. B. Willson.

Publication Committee.

A. C. Goodell, Jr., F. W. Putnam, R. S. Rantoul, Henry M. Brooks, E. S. Atwood.

The PRESIDENT spoke of the movement for a "Free Library" in Salem, and a desire of many citizens for the coöperation of the Salem Athenæum and Essex Institute with the city government and others interested in the attainment of this object; and suggested the appointment of a committee to confer with a committee of the city government and other institutions, and, when a plan has been matured, to report the same for the action of the Institute, at a meeting legally called for the purpose.

The President, Vice Presidents, Recording Secretary and Librarian were chosen on said committee.

The SECRETARY spoke of some flowers which were upon the table, and alluded briefly to the prospect of the horticultural exhibitions the coming season.

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REGULAR MEETING, MONDAY, MAY 19, 1873.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

Horace B. Sargent of Salem was elected a resident member.

Adjourned to Thursday evening, May 22.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., JUNE, 1873. NO. 6.

One Dollar a Year in Advance. 10 Cents a Single Copy.

ADJOURNED MEETING, THURSDAY, MAY 22, 1873.

THE PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the correspondence :—

From Stephen M. Allen, Boston, May 16; Jacob Batchelder, Lynn, May 21; Caroline H. Dall, Boston, May 15; B. H. Hall, Troy, New York, May 12, 19; J. C. Holmes, Detroit, Michigan, May 15.

The LIBRARIAN reported the following additions :—

By Donation.

ANDERSON, M. C. The Holy Bible. 1 vol. 12mo. London. 1658.

BUTLER, B. F., of U. S. H. R. Congressional Globe, 2d Session, 42d Congress. 1871-73. 5 vols. 4to. Index, 1871-72. 1 vol. 4to. Appendix, 1871-72. 1 vol. 4to. Ninth Census of the U. S., 1870. 1 vol. 4to. Message and Documents, 1872-73. 4 vols. 8vo. Department of Agriculture, 1871. 1 vol. 8vo. Commercial Relations, 1871. 1 vol. 8vo. Geological Survey of Montana and the Adjacent Territories, 1871. 1 vol. 8vo. Land Office Reports. 1870, 1871. 2 vols. 8vo. Geological Survey of Wyoming and Contiguous Territory, 1870. 1 vol. 8vo. Patent Office Reports. Vols. ii, iii, 1869. 2 vols. 8vo. Finance Report, 1872. 1 vol. 8vo.

CROSBY, ALPHEUS. Boston Daily Advertiser, 1869, 1870, 1871, 1872. The Commonwealth, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872. Boston Daily Journal, 1867, 1868, 1869, 1870, 1871, 1872. Salem Gazette, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870,

1871. Salem Observer, 1833, 1864, 1835, 1866, 1867, 1868, 1869, 1870, 1871, 1872. Salem Register, 1863, 1834, 1835, 1836, 1867, 1838, 1839, 1870, 1871. Boston Daily Transcript, 1865, 1866, 1867.

National Association of Wool Manufacturers. Bulletin, Jan.-Mch., 1873.

U. S. Patent Office. Official Gazette, Mch. 25.

Ward, Julia E. Catalogue of the Mt. Holyoke Female Seminary in South Hadley, Mass., for 1872-3. 8vo pamph.

By Exchange.

Botanisk Tidsskrift, Kjöbenhavn. Tidsskrift, Anden Raekke. Forste Bind. Tredje and Fjaerde Haefte. 2 pamphlets, 8vo.

Kongelige Danske Videnskabernes Selskab Kjöbenhavn, Oversigt, 1871. No. iii. 1872. No. i. 2 pamphlets, 8vo.

Königliche Gesellschaft der Wissenschaften. Göttingen Nachrichten, aus dem Jahre, 1872.

Minnesota Historical Society. Report for 1872. 8vo pamph.

Naturforschende Gesellschaft in Bern. Mittheilungen, Nos. 745-791. 1871.

New England Historic-Genealogical Society. Register and Journal of, April, 1873.

Physikalisch medicinische Gesellschaft in Würzburg. Verhandlungen, Neue Folge, iii Bd., iii Heft, Wurzburg, 1872.

Verein zur Beförderung des Gartenbanes, Berlin. Wochenschrift, Nos. 1-52, 1872.

Yale College. Catalogue of the Linonian Brothers' Library. 1 vol. 8vo.

Publishers. Bouton's Catalogue. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Quaritch's Catalogue. The Foxboro Times. Salem Observer.

The President noticed the recent donation, from Henry K. Oliver of Salem, of a portfolio containing plans of several of the old houses of Salem, and other architectural designs, made by Samuel McIntire, the noted architect of Salem, during the latter part of the last and the first of the present century; also a manuscript book of records, entitled, "The First Book of Records of the Proprietors of Common Lands of Salem Village," presented by Miss Ruth Marsh of Peabody.

Christopher Metzger of Danvers was elected a resident member.

Edward Brown, of Brooklyn, New York, occupied the hour with an interesting lecture upon "Christianity in its Relation to Moral Philosophy and Literature." Mr. Brown was educated a "Friend," and is now a member of that society, and it was from this standpoint that the subject was viewed.

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SPECIAL MEETING, MONDAY, JUNE 9, 1873.

MEETING at 8 P.M. The President in the chair.

The President stated that this meeting was called to pay a tribute of respect to the memory of Rev. John Lewis Russell, of this city, an original member of the Essex County Natural History Society, and its president from 1845 to 1848, when the union with the Essex Historical Society was effected, and a new organization adopted under the name of Essex Institute. Mr. Russell was a vice president of the Institute from its organization until 1861.

Rev. E. B. WILLSON presented the following resolutions, which, after appropriate remarks from Rev. Messrs. Willson and Batchelor, Mr. George D. Phippen and Rev. Messrs. E. C. Bolles and E. S. Atwood, were adopted:—

Resolved, That in the death of JOHN LEWIS RUSSELL, the Essex Institute has lost one of its founders, one of its earliest, most learned and most enthusiastic leaders in scientific study: — one who for many years filled important offices in its management, and devoted himself to its interest with an inspiring zeal and energy.

That in his death science loses a loyal and ardent disciple; and in his own chosen department of Natural History a distinguished proficient.

That public education owes much to him as a lecturer and teacher in her normal and other schools of higher instruction, where his rare power of clothing science in beauty kindled in many a desire for closer acquaintance with nature, and discovered to them a new and pure joy in the pursuit of that knowledge, through her boundless realms of order and ever unfolding life.

Resolved, That the foregoing resolutions be entered upon the records of the Institute; and that a copy of them be sent to the family of Mr. Russell, with an expression of the sincere sympathy felt by the members of the Institute for them in their bereavement.

A committee consisting of G. D. Phippen, S. P. Fowler and F. Putnam was requested to take such further notice of the deceased as may be deemed appropriate.

FIELD MEETING AT AMESBURY, THURSDAY, JUNE 19, 1873.

THE leafy month of June, with the fields and landscape clothed in their richest verdure, and dotted with the varied hues of many flowers, invites the Institute to commence the series of field meetings, the succession of which during the season exhibits the different phases which nature assumes, from the opening of the bud to the ripening of the golden fruits of autumn. This county, located in the northeastern corner of the Old Bay State, and having one side washed by the waters of the ocean, offers to the student of nature an opportunity to investigate the marine fauna and flora, in addition to those usually found in our excursions to the inland towns, where an entirely different class of objects, peculiar to such localities, grow in their wild luxuriousness.

The attendance at this field meeting was larger than usual for the opening meeting, and, although the weather was uncomfortably warm, the occasion was one of great enjoyment. The party went by the train leaving Boston at 7.30, and on arrival at Newburyport were met by Messrs. Brown and Crane, a committee of the Amesbury and Salisbury Historical Society, who had come thus far to welcome them and to escort them to their destination. On arrival at the Salisbury station, guides were found in readiness to accompany those who desired to visit the Indian shell heaps, which were more accessible from that point than from the one at Amesbury. On arrival at the end of the route, many of the leading citizens had assembled and extended a cordial reception. The party then separated into groups, and sallied forth in charge of trustworthy guides to visit various objects of interest abounding in the vicinity. Many who had been long familiar with the writings of the distinguished poet, JOHN G. WHITTIER, now for the first time saw his cheerful face; and his home, and the unpretending meeting-house where he worships, were among the objects sought with a feeling akin to veneration by those who have admired his touching word pictures in simple verse. The extensive woollen mills and the flourishing carriage manufactories attracted much attention, and the general appearance of thrift and industry was a subject of commendation. Several of the churches and school-houses were also objects of interest. The woods, swamps and ponds were peculiarly attractive, and were visited by many. A large company ascended Powow Hill, said to be the highest land in the county, and were well repaid for their toil by the extensive views in all directions. With the unaided eye four states can be clearly seen, and with a powerful glass the mountain peaks of the Green and White ranges can be readily discerned.

Shortly after one o'clock the party repaired to Merrimac Hall, where the ladies of Amesbury had prepared the tables with a bountiful and elegant repast embracing everything seasonable and delectable — meats, pastry, cake, ices, coffee, fruits, flowers, etc.

The meeting for reports and addresses was held at the Universalist Church at 2.30 P.M.

As the audience assembled a voluntary was performed upon the fine organ.

President WHEATLAND in the chair.

Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From Stephen M. Allen, Boston, June 6; E. C. Bolles, May 19; S. P. Boynton, Lynn, June 17; C. H. Dall, Boston, June 1, 3; G. F. Flint, June 2; J. A. Gillis, May 20; L. F. Griffin, Andover, June 18; Harold Herrick, New York, June 7, 16; A. Lackey, Groveland, May 29; W. P. Lunt, Boston, June 18; A. Osgood, Newburyport, May 9, 17, June 4, 13; G. W. Pease, June 6; M. A. Stickney, May 30; M. Vickary, Lynn, May 31; C. A. Walker, Chelsea, May 20, June 13; E. B. Willson, May 17; G. B. Wood, Elizabethtown, N. Y., June 9; W. C. Wood, Wenham, May 23; Ashbel Woodward, Franklin, Conn., June 6; Berlin, die Gesellschaft Naturforschender, March 22; Buffalo Society of Natural Sciences, June 6.

The LIBRARIAN reported the following additions:—

By Donation.

ATWOOD, E. S. Memoir of Nathaniel Bowditch, 1 vol. 4to. Introductory Discourse and the Lectures of the American Institute of Instruction, 1831, 1833. 2 vols. 8vo. Miscellaneous volumes, 6.

BUTLER, B. F., M. C. Compendium of the Ninth Census of the U. S., 1870. 1 vol. Report on the Commerce and Navigation of U. S., 1872. 1 vol.

CITY OF BOSTON. Boston City Documents, 1872. 3 vols.

CLOGSTON, WM., of Springfield, Mass. Zanesville Directory, 1872–73. 1 vol. Lockport City Directory, 1871–72. 1 vol. Manchester Directory, 1871. 1 vol. Auburn Directory, 1869. 1 vol. New Bedford Directory, 1865. 1 vol. Burlington Directory, 1871–72. 1 vol. Lawrence Directory, 1857. 1 vol. Manchester Directory and Almanac, 1856. 1 vol. Northampton Directory and General Advertiser, 1860–61. 1 vol. Chelsea Directory, 1860–61. 2 vols.

DRIVER, SUSAN S. History of the late Polish Revolution. 1 vol. Agriculture of Mass., 1854, 1857. 2 vols.

FOLGER, W. C., of Hingham. Miscellaneous Town Reports, 5.

GRANT, J. C. Scientific American, 1853-72.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 9.

JOHNSON, MRS. SAMUEL. Miscellaneous pamphlets, 26. Almanacs, 6.

LEE, JOHN C. Commercial Bulletin, March 15, 22, 29, April 5, 12, 1873.

MARSHALL, WM., of New York. Reports of the Brooklyn Park Commissioners, 1861–1873. 1 vol.

OSGOOD, C. S. Manual for the Common Council of Salem, 1873. 1 vol.

Palfray, C. W. Steam-Boiler Explosions, by J. R. Robinson. 1 vol. Protection to Native Industry. 1 vol. Miscellaneous pamphlets, 20.

Poole, F., of Peabody, Mass. Peabody Press and Danvers Monitor, 1872.

Salem Marine Society. Laws and List of Members from 1766–1872. 1 vol.

Silsbee, Mrs. B. H. The Science of Government, by C. B. Goodrich. 1 vol. Report on the Trees and Shrubs in Mass. 1 vol. History of the Water Works of Boston, 1868. 1 vol. Abstract of the Mass. School Returns, 1845-46. 1 vol. Eighth Census of the U. S., 1860. 1 vol. Patent Office Report, 1854. 2 vols. Salem Municipal Register, 1867. 1 vol. Water Power of Maine. 1 vol. 22 pamphlets.

Stearns, R. E. C., of San Francisco, Cal. Directories of San Francisco for 1863-64, 1870. 2 vols.

Tenney, Harriet A. Catalogue of the Michigan State Library, 1873–74. 1 vol.

U. S. Patent Office. Official Gazette, May 6, 13, 27, 1873.

Walker, F. A., of Washington, D. C. Compendium of the Ninth Census of the U. S., 1870. 1 vol. 8vo.

The President, in his opening remarks, alluded to the pleasant associations connected with a visit to this town of Amesbury, well known, with its neighbor, Salisbury, to the mercantile community, for its varied mechanical industries, and especially in the field of letters, as the home of New England's best known and honored poet, Whittier, who from this quiet retreat has sent forth many of those graphic lines that have contributed so much to the cause of liberty and human progress. He said that ten years had elapsed since the Institute held its first meeting in this town. It was on Thursday, June 25, 1863, one of the loveliest of June days. The people were very kind and hospitable, and pointed out the various objects of historic and scientific interest. Our vice president, Mr. A. C. Goodell, Jr., was present on that occasion, and gave an account of his rambles among the historic memorials and relics, noticing among others the graves of two of the first ministers, Rev. William Worcester and Rev. John Wheelwright, the latter distinguished for his persistent advocacy of the cause of Anne Hutchinson and for the persecutions he endured therefor; the old Bartlett house, where Josiah Bartlett, one of the first signers of the Declaration of Independence, was born, and the room in the building where the commissioners met to define the boundary between New Hampshire and Massachusetts.

The President alluded to a singular coincidence that had occurred during the past week: the remains of three persons who had been in years past interested in the objects of the Institute, have been consigned to the silent tomb, and he offered the following tribute to their memories.

1st. Rev. JOHN LEWIS RUSSELL, one of the founders of the Natural History Society and, after 1848, the vice president of the Natural History department of the Essex Institute; one of the earliest, most learned and most enthusiastic leaders in scientific study; for many years filling important offices in these institutions; cabinet keeper, curator, vice president and president. At all our early field meetings he was a constant attendant and frequently the presiding officer, devoting himself with an inspiring zeal and energy to contribute to the interest and importance of these gatherings. He was the son of Col. John and Eunice (Hunt) Russell, and was born at Salem, Dec. 2, 1808, and received the first rudiments of instruction at her schools. When John was about the age of eleven his father removed with his family to Amesbury and resided several years in that place, having the charge of the Amesbury Iron factory, and then returned to Salem; during this period John attended the Newburyport Academy, under Masters Bailey and Pike, except the year immediately preceding his admission to Harvard College in 1824, which was spent in the town where we are now assembled, studying under the direction of Rev. Mr. Barnaby, the Baptist clergyman—probably well known to some now present. After graduation he entered upon the study of the ministry, and in due course of time was licensed to preach. He was settled over churches in Chelmsford, Hingham, Brattleboro and several other places. He, however, always considered Salem his home, and for the last twenty years has permanently resided there, withdrawing from ministerial labors and devoting almost exclusive attention to scientific investigation. He was eminently known as a botanist, particularly in the cryptogamic flora of this county. He died on Saturday afternoon, June 7, 1873.

2nd. **William Oliver Thayer**, son of Oliver and Rachel (Bancroft) Thayer, of Salem. In his early boyhood William brought to the horticultural exhibitions contributions of fruits and flowers from his father's garden. Since that time he has always been an interested member, although his business avocations prevented him from taking an active part in the meetings of the Institute. He died on Monday, June 9, 1873, aged thirty-nine years and nine months.

3rd. **Hon. Richard Saltonstall Rogers**, well known to those of a past generation as an active merchant in the firm of N. L. Rogers & Bros., who were the pioneers and founders, in the United States, of the Zanzibar and New Holland trades; for many years, down to 1842, were actively engaged in foreign commerce mainly with the East Indies, and were among the most distinguished merchants of Salem. He was son of Nathaniel and Abigail (Dodge) Rogers, who were both eminent teachers in Salem. He was earnestly interested in municipal affairs, a good citizen and an energetic, enterprising and efficient man of business, and much respected for his many excellent qualities; always a liberal patron of the Institute and contributed largely to its success. He died at his residence in Salem, June 11, 1873, aged eighty-three years.

Expressing great pleasure at meeting so many of those who were present at the meeting of 1863, and the opportunity now afforded of extending our acquaintances in this goodly place, the President called upon

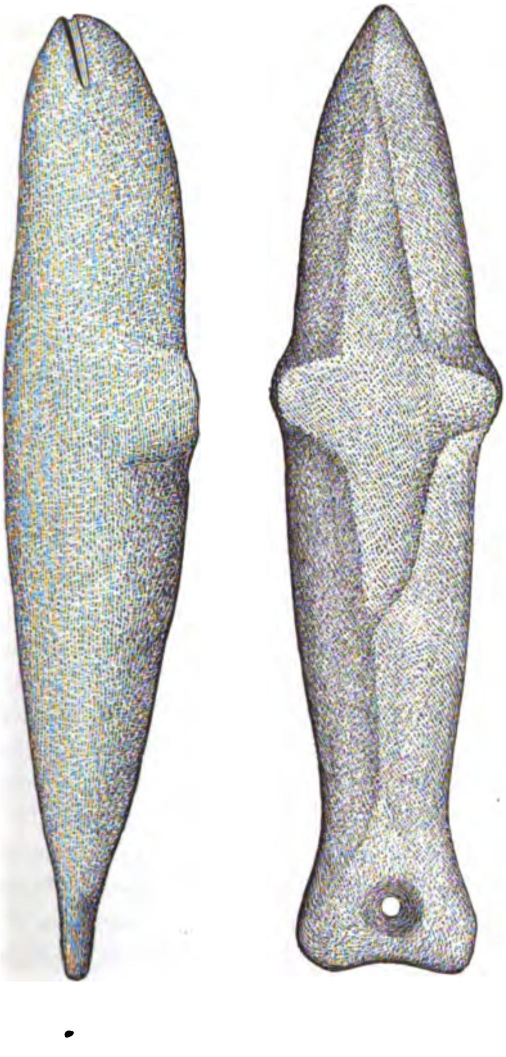
Hon. Allen W. Dodge, of Hamilton, who responded and said that while he did not profess to be much of a scientific man, he did claim to be second to none in his love for nature and his desire to see the objects of the Essex Institute accomplished. The President had spoken of the death of some who had been identified with us, and we are reminded that men die, but events live. If the man who makes a blade of grass grow where it did not is a benefactor, so is he who introduces a new fruit or a new flower, or who opens up some new view of nature. The last quarter of a century had been one of great progress, and we cannot foresee what the next twenty-five years will bring in the department of scientific investigation. The question may be asked, What good will it do? It will make somebody better; it will make somebody happier. He spoke of the pleasant morning hours he had spent in his garden, and advised any one who did not know by experience what it was to take a little exercise before breakfast, to get up some morning at four o'clock, and try the experiment.

Mr. Dodge then referred to some ancient wills and inventories he had examined, and spoke of the curious insight afforded by probate documents into domestic and social life of the olden times. Our forefathers did not have friction matches, but tinder boxes, or, earlier still, tinder horns. Our maternal ancestors manufactured their own cloth, and made it into garments and bedding, and in those days it required these things in abundance to provide for the large families of children, then called blessings. At that period they raised children, and cattle, and all kinds of stock, in great abundance. Well, there was more room to grow then than now, and our ancestors were equal to the occasion. Mr. Dodge concluded with some valuable practical suggestions, expressed in humorous and attractive phrase, and thanked the people of Amesbury and Salisbury for the active interest manifested on this occasion.

Mr. F. W. PUTNAM exhibited a number of stone implements which he had been allowed to select for the purpose from the very interesting collection belonging to the Amesbury Natural History Club. He stated that he had selected the forms on the table as they illustrated the various types of stone implements found throughout New England and consisted of the several forms of arrowheads, spearheads, skin-dressers and scrapers, chisel and gouge-shaped implements, axes, hammer-stones, sinkers, pestles, etc. Many of the forms on the table were common the world over, and showed conclusively that the same ends were accomplished by the same means; other forms, though belonging to the same general groups, were, however, slightly different in the details of their execution and were peculiar to New England so far as he knew. The long-bladed axe, with the rounded upper portion, and some of the gouged-shaped implements came into this group. The large, roughly made "plumb bob" shaped "sinkers" are one of the forms, as yet to his knowledge, found only in New England. These large pear-shaped implements are quite common on the sea-coast and are so well adapted for use as sinkers to nets that they are generally classed as such, though it cannot be questioned but that many of them run into the forms of pestles, and would serve well for use as such, provided grit was no objection as a component of "Indian cake;"

though the grit would be avoided if such pestles were used in wooden mortars similar to those in use by the early white settlers in this country. The extreme softness of the stone of which these large pear-shaped implements were made, combined with the fact that they seldom exhibit signs of use at their rounded end, was the only argument against their use as pestles. But as an argument that they were sometimes used as pestles it was stated by one of the gentlemen of the Amesbury Club that the specimen on the table was found in a stone mortar; there was also a specimen in the Salem collection that was said to have been found in the same connection. Some of the arrowheads among the specimens were very fine, and exhibited the several forms, from the leaf-shaped to the barbed and stemmed, several specimens being of the form, having one of the wings longer than the other. While some of the symmetrical arrowheads were very long and slender, others were of the short and broad shape. There were also in the collection a number of specimens of stone-drills which are often placed by collectors with the arrowpoints, but which on examination show that a different use was intended, and implements of this character are now believed to have been made and used simply for the purpose of drilling holes in other implements. One of the largest and most perfect of these drills which Mr. Putnam had ever seen was exhibited.

Besides these various implements there was a very interesting carved stone belonging to the collection, which Mr. Putnam had obtained permission to figure. It rudely represented a porpoise or still better a white whale or *Beluga*, as it had no protuberance representing the dorsal fin of the porpoise, and the Beluga is without the fin. The flippers or pectoral fins were represented by the pro-



Indian totem from Seabrook, N. H., one-half natural size. In Coll. Amesbury Nat. Hist. Club.

tuberances on the sides, and the mouth was cut in and well indicated. The broad horizontal tail was decidedly cetacean in character, and the whole carving, though rudely done by picking the sienitic rock from which it was made with stone implements, was yet so characteristic as to indicate at once that a porpoise or Beluga was intended. A hole through the portion representing the tail shows that the object was suspended, but the stone is so large and heavy that it can hardly be classed as a personal ornament, though it is probably to be regarded as a totem. It measures ten inches in length by about two in depth at the pectoral fins, and is about two and a quarter inches wide across the pectorals as measured on the under side. This interesting specimen was found at Seabrook, N. H., and it is said that two other similarly worked stones have been found at the same place.

[The figures here given from drawings made by Capt. J. A. Greeley of Amesbury, and Mr. J. H. Emerton of Salem, represent the "totem" in profile and from the under side.]

Mr. James H. Emerton gave a curious account of several species of spiders, particularly one that never builds its own house, but dislodges some other tenant, thus living by acquisition rather than construction.

Mr. Emerton having placed a few batrachians, collected by some of the party, on the table, Mr. Putnam was called upon to give an account of them, which he did by reviewing the batrachian fauna of the state, and noticing the various habits and peculiar notes of the several species of toads and frogs found in the vicinity, and comparing them with the salamanders, which are another order of the same class. He also gave an account of the development of the batrachians and showed the differences between the salamander and frog in certain details, and that in the general law of development from the egg they agreed with each other and approached more nearly to the fishes than to the true reptiles, with which they were so commonly but erroneously classed by persons generally. He concluded his remarks by showing the close agreement between the true reptiles, comprising the snakes, lizards, turtles, etc., and the birds.

Rev. W. H. **Eaton**, of Amesbury, by request, gave a short sketch of Rev. Mr. Barnaby, formerly settled over the Baptist church in Amesbury, and now, at the age of eighty-five years, engaged in his fourth pastorate over the church in East Hardwick, where he was originally ordained, and into which organization he had received more than twelve hundred members on profession of faith.

Mr. **Homer B. Crane**, of Amesbury, spoke briefly of the geological peculiarities of Amesbury, especially of Powow Hill.

Dr. H. G. **Leslie**, President of the Amesbury and Salisbury Historical Society, alluded to the benefits to be derived from scientific research, and spoke of the vein of lead discovered near the summit of Powow Hill and also offered a few remarks on some of the stone implements that he had collected.

Mr. **William Ashby**, of Newburyport, now in his eighty-sixth year, spoke of his long interest in the Essex Institute, and bade it God speed in its work.

Rev. C. M. **Dinsmore**, of the Methodist church in Amesbury, spoke eloquently of the importance of teaching from nature rather than depending exclusively upon text-books, and hoped that the minds of the people would turn more to the study of nature. In England, he said, the laboring people crowd out to scientific lectures, but in America, comparatively speaking, science has no interest.

WILLIAM C. BINNEY, Esq., of Amesbury, said he wished to express his gratitude to the Institute for this visit; he had been interested and had gained much information. He hoped ten years would not intervene before the next field day in Amesbury.

Rev. P. S. BOYD, of the Congregational church, in Amesbury, Mr. GEORGE WILLIAMSON, of Amesbury, and Dr. W. H. NOYES, of Newburyport, offered a few remarks.

William H. Dennet of Beverly and W. H. H. Marsh of Salem were elected resident members.

ALFRED OSGOOD, Esq., of Newburyport, introduced the following resolutions:—

Resolved, That the grateful thanks of the Essex Institute be tendered to Mrs. Jacob R. Huntington, Mrs. J. Hume, Mrs. S. S. Spear, Mrs. P. S. Boyd, Misses A. M. Boardman, Lizzie Hume and May Huntington, Dr. A. T. Brown, Messrs. E. A. Brown, H. B. Crane, J. Hume, J. T. Greeley, Wm. D. Pecker and J. G. Whittier; also to the Amesbury and Salisbury Historical Society, the proprietors of Merrimac Hall and of the Universalist church, and all who have contributed to make this meeting so successful.

The resolution was unanimously adopted and the meeting adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., JULY, 1873. No. 7.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT LYNNFIELD, WEDNESDAY, JULY 30, 1873.

THE party arrived about 10.30 A.M., and after assembling in the church, which was the head-quarters for the day, and where the preliminary arrangements were made, separated into groups for the various excursions; some went to "Robin's Rock," some visited the woods; others collected about the borders of the lake. Owing to the purity of the water the dredging party were not very successful in collecting specimens though several curious and interesting forms were detected.

Lynnfield is a place which has many natural attractions. It was formerly a part of Lynn, at which time it was known as Lynn End. It is almost exclusively a farming town, and its public affairs are always conducted frugally and with good judgment, so that its taxation is low, and the town is never in debt. It has about a thousand inhabitants, and two villages which are three miles apart, neither being large settlements, but the largest of the two being at the Centre, which has two meeting houses and the town hall. The latter institution is, in fact, contained in the old church, which, in Parson Motey's day, began to harbor a larger share of the "liberal" theology than has been common in country towns; Mr. Motey himself, in his closing years, being a Unitarian. The result was the building of a new church devoted to the more exclusive propagation of the "Orthodox" creed. The second story of the old church is still retained as a place of worship, and Mr. Eben Parsons, a lay minister, of the Unitarian denomination, regularly officiates there. The other church is at the present time without a pastor. In South Lynnfield, near the hotel, there is a small meeting house, where regular preaching is supplied by Mr. J. F. Wilson, a student from Andover. For a number of years, the ministerial duties were performed by Mr. Jacob Hood, who formerly resided in Salem, but is now a resident of Lynnfield Centre.

The Lynnfield hotel, which is an institution that dates with the building of the Newburyport turnpike, is not now used for public purposes, but in its day it has served as a landmark which will be long remembered as the resort of sleighing parties from Salem.

Humphrey's Pond, near the hotel, is a beautiful sheet of very pure water. During the war times, the pond, with the level land adjoining, afforded sufficient advantages for the location of an encampment, and the twenty-second and twenty-third regiments were stationed there. The pond has for many years afforded a desirable location for summer residents, and the estate of Mr. Henry Saltonstall (on the Peabody side of the line) has long been noted for the attractiveness of its situation. Mr.

D. P. Ives has also recently built a summer residence on the margin of the pond.

Humphrey's Pond was so named from John Humphrey, who, in the early settlement of the country, received from the king a grant of five hundred acres of land, which included this sheet of water. Humphrey married a daughter of the Earl of Lincoln, and sister of the Lady Arabella Johnson. Suntaug Lake is a later designation for this pond, and one which is growing into common use. The region about the pond is high land. The pond itself has a small water-shed, and, as no stream flows into it, it is believed to be supplied from springs. The streams which flow from it, on either side, are tributary to the Saugus and Ipswich rivers. Its high position and the great purity of the water have combined to cause the pond to be frequently spoken of as desirable in supplying other and larger places with water for domestic purposes, though as yet no steps have ever been taken in this direction. There is an island in the pond, and it is recorded that, in the early days of the settlement, munitions were stored there "for the time of need."

Robin's Rock, about half a mile from the hotel, is a big rock with a hollow in the top, which is said always to contain water. The ledge is granite, of very excellent quality, and Prof. Hitchcock says it cannot be distinguished from that of Quincy. In August, 1849, a company was formed here for the purpose of working this quarry; but the transportation facilities not being all that was desirable, the work was finally relinquished. Of late another part of the quarry is being worked by parties from Peabody, and there is no reason to doubt that eventually it will be worked quite extensively.

Gen. Josiah Newhall, who is now in the neighborhood of eighty, is a man of much activity, and retains the full enjoyment of all his faculties. He moves about with the briskness of a man of fifty, and feels a warm interest in the history and welfare of his native town, as well as in all objects that come under the special cognizance of the Essex Institute. He was born on the spot where he now lives, in a house built by his grandfather a hundred and twenty-five years ago; his present house having been built by himself in 1823. Nearly or quite all the trees growing about and near his premises were planted by himself, and the interest in his grounds was enhanced, to many of the party, by the fact that he has as many as fifty bearing fig trees, which are annually removed to his cellar before the cold weather begins, and again set out in spring. He has also one pomegranate tree or bush. During the day his house was thrown open to the party, and he kindly provided tea and lemonade for their refreshment.

The afternoon meeting was called to order at a quarter before three — the President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence:—

From George Arnold, Boston, July 11; J. W. Chadwick, Brooklyn, New York, June 19; W. H. Dennet, Boston, June 21; Samuel A. Drake, Boston, July 28; Samuel G. Drake, Boston, July 24; W. H. Eaton, Amesbury, June 25; Charles Hallock, New York, July 22, 26; W. P. Lunt, Boston, July 18; W. H. H. Marsh, Salem, June 21; Alfred Osgood, Newburyport, July 10; James Perkins, Boston, July 7; S. J. Spalding, Newburyport, June 26; H. L. Williams, Salem, July 10; American Pomological Society, Circular, 14th Session; Brazil, Legacäo do, Washington, June 10; Belgique, Société Entomologique de, fev. 3; Erlangen, Die physikalisch-Medicinishe Societat in, 3, 2, 73; Frankfurt a M., Naturforschenden Gesellschaft, Jan. 10; Freiburg, Die Naturforschende Gesellschaft, Marz 16; Liverpool Literary and Philosophical Society, April 9; Lisbonne, L' Académie Royale des Sciences, March 26; Riga, der Naturforscher Verein zu, Nov. 1; Hobart Town, Royal Society of Tasmania, Nov. 28; Washington, Smithsonian Institution, July 22, 28.

The Librarian reported the following additions:—

By Donation.

Allen, John Fiske. Boston Cultivator for 1871, 1872. Christian Register for 1871, 1872.

Butler, B. F., M. C. Memorial Address on Hon. Garrett Davis, Dec., 1872. Compilation of the Internal Revenue Laws of the U. S., Jan. 6, 1872.

Emerson, Geo., B. Massachusetts Teacher, 9 numbers.

Foote, C. Files of several County Papers for April, May and June, 1873.

Foote, H. W., of Boston. James Freeman and King's Chapel, 1782–87. A Chapter in the early History of the Unitarian Movement in New England. Sixth Annual Report of the Directors of the Mass. Infant Asylum, April 1, 1873.

Green, S. A., of Boston. Miscellaneous pamphlets, 16.

Hitchcock, Geo. B., of San Francisco. San Francisco Directory, 1850. 1 vol. 18mo. Hand-Book Almanac for the Pacific States, 1863. 1 vol. 12mo.

Humphreys, Brig. Gen. A. A., of Washington. Report on the Potomac Aqueduct of the Alexandria Canal, 1835–40. 1 vol. 4to.

Lee, John C. Commercial Bulletin for June 7, 14, 21, 28, July 5, 12, 19, 1873.

Loring, George B. Thirty-sixth Annual Report of the Board of Education, Jan., 1873. 1 vol. 8vo. Thirtieth Registration Report of Mass., 1871. 1 vol. 8vo. Ninth Annual Report of the Board of State Charities, 1871–72. 1 vol. 8vo. Agriculture of Mass., by C. L. Flint. 2d Series, 1872–73. 1 vol. 8vo. State Board of Health of Mass., Jan., 1873. 1 vol. 8vo. Miscellaneous pamphlets, 3.

National Association of Wool Manufacturers. Bulletin for April–June, 1873.

North Church and Society. First Centenary of the North Church, Salem, 1772–1872. 1 vol. 8vo.

Perkins, James, of Boston. Half Century Membership in R. W. Charles W. Moore in Lodge of St. Andrew, Boston. 1 vol. 8vo.

Phillips, Stephen H., of San Francisco. San Francisco Directories for 1867–68, 1868–69. 2 vols. 8vo.

Saville, J. H., of Washington, D. C. Report of the Board of Civil Service Examiners for the Treasury Department, Jan., 1873.

Stickney, M. A. Miscellaneous pamphlets, 25.

Stone, Mrs. J. H. Boston Almanacs, 1839-1862. 29 vols. 16mo. Salem Directories, 1837, 1842, 1846, 1850, 1853, 1855, 1857, 1859, 1861. 9 vols. 12mo. American School Hymn Book. 1 vol. 16mo. Oliver Optics, 39 numbers. The Churchman, 50 numbers. Farmer's Monthly Visitor, 36 numbers. Boys' and Girls' Weekly, 27 numbers. Miscellaneous pamphlets, 77.

Upham, W. P. Centennial of the Boston Pier, or Long Wharf Corporation, 1873.

U. S. Patent Office. Official Gazette for June 3, 10, 17, 24, July 1, 8.

Valentine, Mrs. Geological Survey of Park County, by B. C. Hobbs, LL.D.

Williams, Henry L. Miscellaneous pamphlets, 67.

Winthrop, Rob't C., of Brookline. Dedication of the Brookline Town Hall Feb. 22, 1873.

By Exchange.

Academia Real das Sciencias in Lisboa, Portugal. Lendas da India por Gaspar Correa, Tomo i, parts 1, 2. Tomo ii, parts 1, 2. Tomo iii, parts 1, 2. Tomo iv, parts 1, 2, 1859-1866. Journal de Sciencias Mathematicas, Tomo i, ii, iii, 1868–1871. 3 vols. 8vo.

Académie Royale des Sciences, Arts et Belles-Lettres in Caen. Memoires, 1873. 1 vol.

American Academy of Arts and Sciences, Boston. Proceedings of, pp. 409–504, 1872–3. 8vo pamph. Memoirs of, New Series. Vol. ix, part 2.

American Philosophical Society. Proceedings of the, May–June, 1873.

Bibliothèque Universelle et Revue Suisse. Archives des Sciences Physiques et Naturelles. Nos. 182, 183, 184. Feb., March, April, 1873.

Buffalo Society of Natural Sciences. Bulletin of. Vol. i, No. 1. April, 1873.

Canadian Institute. Journal of Science, Literature and History. May, 1873.

Cincinnati Public Library. Annual Report of the Common Schools of Cincinnati, 1872-3. 1 vol.

Crosse et Fischer. Journal de Conchyliologie. 3e Sèrie, Tome xii, No. 4, Tome xii, No. 1. 1872-73.

Der Physicalisch-medicinischen, Societat in Erlangen. Sitzungsberichte, iv Heft. Nov., 1871-Aug., 1872.

Georgia Historical Society. Proceedings, Resolutions and Communications of the Hon. E. J. Harden.

Gesellschaft Naturforschender Freunde in Berlin. Sitzungsberichte. Jahrg. 1872. 1 vol.

Imperial Government of Brésil. Climats, Geologie, Faune et Geographie botanique du Bresil. 1 vol. 8vo.

Institut Historique in Paris. L' Investigateur, Nov., 1872-Jan., 1873. 38e Annèe.

Iowa State Historical Society. The Annals of Iowa, April, 1873.

K. K. Zoologisch botanische Gesellschaft in Wien. Verhandlungen, Bd. xxii, 1872. 1 vol.

Königliche bayerische botanische Gesellschaft in Regensburg. Flora, 1872. 1 vol.

L' Athénee Oriental in Paris. Bulletin, 10 Année, No. 13. Juin, 1869.

•Liverpool Literary and Philosophical Society. Proceedings, Vol. xxvi, 1871-72.

Massachusetts Historical Society. Proceedings of, 1871-73. 1 vol.

Naturforschenden Gesellschaft in Emden. Jahresbericht, 1871.

Naturforschende Gesellschaft zu Freiburg. Berichte, Bd. vi, Heft 1, 1873,

Naturforschende Verein in Brünn. Verhandlungen. Bd. x, 1871. 1 vol.

Naturwissenschaftlichen Vereine zu Bremen. Abhandlungen, iii Bd., 3 Heft, 1873. Beilage, No. II, zu den Abhandlungen des.

New England Historic-Genealogical Society. Genealogical and Antiquarian Journal, July, 1873.

New York Genealogical and Biographical Society. Genealogical and Biographical Record, July, 1873.

Peabody Institute of Baltimore, Md. Sixth Annual Report of the Provost to the Trustees, June 5, 1873.

Philadelphia Academy of Natural Sciences. Proceedings of, Pt. i. Jan.-Feb., 1872.

Physikalisch-medicinische Gesellschaft in Wurzburg. Verhandlungen, Neue Folge. Bd. iii, Heft iv, 1872. 8vo pamph.

Rhode Island Historical Society. .Proceedings of the Society for 1872.

Royal Society of Tasmania. Monthly Notices for 1871. 1 vol. 8vo. Meteorological observations at Hobart Town, Result of five years. Tasmania, 1872.

Senckenbeigische Naturforschende Gesellschaft. Bd. viii, Heft 3, 4.

Smithsonian Institution. Smithsonian Contributions to Knowledge. Vol. xviii.

Société d' Acclimation in Paris. Bulletin Mensuel, 2me Sèrie, Tome ix, No. 12, Dec., 1872.

Société Royale des Antiquaires, du Nord a Copenhague. Mémoires, Nouv. Série, 1872. Tillaeg til Aab ger for Nordisk Old Kyndighed og Historie, Aargang, 1872.

Vereins für Erdkunde in Darmstadt. Notizblatt, Heft xi, No. 121-132, 1872.

Zeitschrift für die gesammten Naturwissenschaften in Berlin. Bd. v, vi. Neue Folge, 1872. 2 vols.

Zoologische Gesellschaft. Zoologische Garten, xiii Jahrg. Nos. 7-12, 1872.

Zoologisch-Mineralogischer Verein in Regensburg. Correspondenz-Blatt, xvii Jahrg, 1872. 1 vol.

Publishers. American Naturalist. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Observer. Silliman's Journal. Western Lancet.

The PRESIDENT in his opening remarks alluded to the pleasure that he had always derived, even in childhood from rambling over these hills, fishing in the pond near by and collecting flowers from the meadows and fields. Since the organization of the Institute, four meetings have been held in this place and vicinity. The second field meeting took place in this town, July 24, 1849 (the first having been held in Danvers in the same year). Among the noticeable productions were the locust trees (*Robinia pseudacacia*), large and vigorous, and free from the borer. The serpentine ledges were also duly investigated and discussed at the afternoon session, in the house of the late Asa T. Newhall, Esq. On October 15, 1856, another meeting was held at the house of Rev. A. P. Chute, who had a fine collection of shells and minerals, a meeting having been attempted one day in the August previous, that failed on account of a drenching rain. On June 26, 1861, another meeting took place, at which Rev. E. B. Willson presided; and this was the last that had occurred in the town previous to the one this day, except the meeting at Lynnfield Centre, in August, 1858.

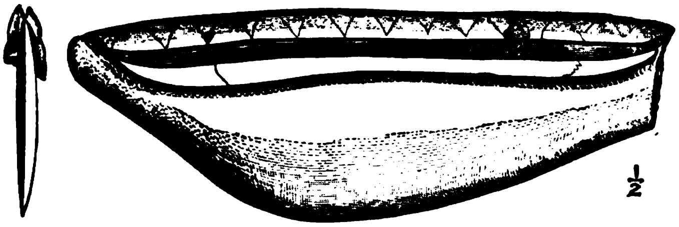
The President alluded to the recent death of a corresponding member, Col. JOHN WELLS FOSTER, who died at his residence in Hyde Park, Chicago, on Sunday, June 29, 1873, aged fifty-eight, one of the most eminent persons of the city of his adoption. He was born at Brimfield, Mass., in 1815; his profession was civil engineering and at an early period of his career he began to follow the bent of his genius. He was prominent in Massachusetts politics from 1854 to 1857. About 1858 he removed to Chicago. His rank as a *savant* was at the very front and his reputation world-wide.

Mr. F. W. PUTNAM being called upon spoke of Col. Foster's eminence as a geologist and archæologist. He was also one of the early government surveyors, and with Prof. Whitney, surveyed the mineral regions of Lake Superior, their joint report being printed by the United States government. Col. Foster had made several discoveries in geology and especially in connection with the formation of the Laurentian hills. Of late years he paid especial attention to the study of the mound-building race, and only a few days before he died, his volume on the prehistoric race of America was published.

Mr. PUTNAM then proceeded to speak of toads and fishes. The young toads now abound on the margin of the pond, having just passed from the tadpole state, the tail being nearly absorbed. Mr. Putnam described the hatching and growth of the tadpoles. They are first provided with external branchiæ which are soon lost, and the internal gills are developed; these are in turn absorbed and, the lungs developing, the young toads are gradually forced to seek air above the surface of the water. They then rapidly assume their perfect form, leave their aquatic life and become terrestrial animals. To-day we have seen myriads of young toads undergoing this important change, and these young will probably remain along the damp margin of the pond until a warm rain comes, which will induce them to wander off, and, as in the course of their march they will possibly be seen by persons, perhaps in the act of crossing a street or garden, it is very likely that we shall hear of another instance of "toads raining down."

Mr. Putnam, in his remarks upon the fishes, confined himself to the structure of the skeleton, pointing out the homologies of the various bones with those of higher animals, and the adaptation of the fish structure to the special purposes for which it was designed.

Mr. **Putnam** stated that since the Amesbury Field Meeting he had received from Capt. J. A. Greely, of Amesbury, a drawing of an Indian knife which differed in details somewhat from any that he had mentioned in a former communication to the Institute (see p. 111). This knife was said by Capt. Greely to be made of "red slate." It is nearly perfect, one end only being broken off, as shown in the figure. Allowing for this missing fragment the knife was about seven inches long; the back is three-quarters of an inch deep and the blade about one and one-half inches. The thickness of the blade in the centre is about three-tenths of an inch. The peculiar workmanship of the back, as shown in the section, in the form of a series of uneven knobs, was probably intended to give firmness to the hold when grasped by the hand. This specimen was found in a sand deposit near Kingston Falls, Kingston, New Hampshire. The figure, which is from the drawing of Capt. Greely, represents the knife of half its size.



Knife made of "red slate" from Kingston, New Hampshire. One-half natural size. Side view and section.

The **President** read the following communication from N. Cleaveland, Esq., in connection with the presentation of the herbarium therein referred to, and several specimens in mineralogy collected near Erzroom in Asia Minor:—

"The collections and insertions in this herbarium were begun by **Oliver Alden Taylor** in 1824, he being at that time a student in Union College, Schenectady. It was by the advice of Dr. Yates and for the benefit of his health that he engaged in botanical study and pursuits. The taste and habits then formed continued through life, as the entries in this hortus siccus abundantly show. In Andover, where for many years he lived a laborious student-life, in Manchester, Mass., where his last years were spent in faithful pastoral work, and in every journey that he made, he seems to have kept up the practice of observing, collecting and examining plants.

The book is presented to the Essex Institute, not as containing anything of special interest for scientific men, but as a curious record of painstaking study and care on the part of one who was always earnestly devoted to other researches, and eminently successful in them. To any who may chance, hereafter, to glance at these dry leaves and stems and flowers, and who may never before have heard of him who gathered and placed them here, let me say that the Rev. Mr. Taylor was not only an amiable and good man, but distinguished, also, for varied learning and great philosophical attainments. In evidence of this it will be sufficient to state that he at one time acted as assistant professor of Biblical Literature in the Andover Divinity School, and that the celebrated Edward Robinson, when contemplating a long absence from his post, for European and Asiatic travel, earnestly requested Mr. Taylor to fill his place in the department of Biblical and Oriental learning at the Union Theological Seminary of New York. Mr. Taylor died (1851) at Manchester, Mass."—N. C.

These mineralogical specimens were sent in 1845 from

Erzroom in Asia Minor by Rev. Jonah Peabody to Rev. O. A. Taylor. Mr. Peabody, a native of Topsfield, Essex County, Mass., was then living at Erzroom, as a missionary of the American Board.

In Mr. Taylor's Journal (See Memoir of Rev. O. A. Taylor, p. 402) he mentions the receipt of the present, thus:—"To my wife was sent a bottle of water from the Euphrates; to me lava one thousand years old from near Khoy; marble from the Chifteh minaret; lava from Hassan Kulaah, or, as is supposed, the ancient Theodosiopolis; lava from near the base of Mt. Ararat."

Rev. E. C. **Bolles**, of Salem, said that in dredging in Humphrey's Pond he had found only four species of shells. This pond is very free from animals, and it contains less parasitic life than usual. The dredge brought up only one form of vegetable life in profusion—that being one of the green globular algæ, each specimen of the size of a buckshot. He then alluded to certain forms of sponges found in the pond, and of the different varieties, the horny, flinty and limy sponges. Sponges are animals, and he explained how they lived, the system of circulation by which they are sustained, and the progress of their growth. The examples from this pond were all of the common *Spongilla fluviatilis*, and exhibited not only the green porous structure of the sponge, but the embedded gemmules, which in time would float out upon the water, and each one would attach itself to some object and develop into the characteristic green mat of the spongilla. The fresh-water sponges have been made a special subject of study by Mr. Carter, an Englishman living in India. Great masses of spongillæ of various species are to be found in the fresh-water tanks in Bombay and other East Indian cities.

Mr. John Robinson, of Salem, the Recording Secretary, exhibited and explained some specimens of the wild flowers and ferns that had been gathered, and also made commendatory reference to the fig and pomegranate trees grown by Gen. Josiah Newhall. In explanation of the growth of figs, he said that it was an error to suppose that they had no blossoms, for great numbers exist, though of small size.

Rev. S. H. Taft, president of Humboldt College, Humboldt County, Iowa, on being called upon, expressed his pleasure at being here, and also at seeing so large a representation of the Essex Institute at his college in Iowa, on the occasion of the meeting of the American Association for the Advancement of Science at Dubuque last year.

Gen. Josiah Newhall, of Lynnfield, being called upon, spoke of the general situation of the town, with particular reference to its water facilities.

Mr. N. A. Horton, of Salem, after making some remarks upon the day and the unusual heat, gave a brief résumé of the rambles of his party, and offered the following resolution, which was unanimously adopted: —

Resolved, That the thanks of the Essex Institute be tendered to Gen. Josiah Newhall, Messrs. J. B. C. Fuller and Joseph Brown for their courtesies and attention during the day; to Mr. G. Saltonstall for the use of his boats; and to the Congregational Society for the use of their church.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 5. SALEM, MASS., AUGUST, 1873. NO. 8.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT CHEBACCO POND, TUESDAY, AUGUST 12, 1873.

BY the kind invitation of Messrs. J. Whipple & Sons, who have for more than ten years successfully kept the Chebacco House at this place, the Institute held a field meeting, this day, in this rural retreat which has grown in public favor and has become quite celebrated for its great beauty and general attractiveness. The particular charm of the place, however, to many people who have a taste for natural scenery and productions, is in spending a quiet day here in small parties. The winding road through the woods, which leads to the place, is very attractive. The ponds, five in number, abound in fish and pond lilies. All the ponds are quite deep and afford good boating places, but the boats are generally concentrated on Chebacco Pond, which lies partly in Essex and partly in Hamilton. This is a large sheet of water, and its many indentations render it very attractive to sailing parties and amateur explorers. The place is also one of great interest to the students of our local botany.

In point of numbers the attendance at the meeting was unusually large, and a number of persons proficient in scientific pursuits were present and consequently a great amount of scientific work was performed in the gathering of zoological and botanical specimens and a greater and better variety has seldom been collected.

The meeting was called to order by the President, on the platform in the grove, at a quarter before two o'clock, and the Secretary read the proceedings of the meeting at Lynnfield.

The Secretary announced the following correspondence :—

From H. W. S. Cleveland, Chicago, Ill., Aug. 6; Charles F. Crocker, Lawrence, Aug. 11; Charles B. Rice, Danvers Centre, Aug. 13; John J. Somes, Gloucester, July 29; American Geographical Society, July 21; Christiana, Det. Kgl. Norske Universitet, Janvr; La Société Royale des Sciences et des Lettres de Throndhjem.

The Librarian reported the following additions :—

By Donation.

Crocker, Charles F. of Lawrence. History of Lawrence. 1 vol. 8vo. Lawrence, 1868. Catalogue of the Lawrence Public Library. 1 vol. 8vo. Lawrence, 1873. Anniversary Services of the Grace Church, Lawrence, Oct., 8, 10, 11, 1871.

Mills, R. C. Nation for 1869, 1870, 1871, 1872. The Week for 1868.

Saunders, Miss. Neuvo Testamento. 1 vol. 12mo. Conquest of Mexico. 2 vols. 8vo. Dictionary of the Spanish and English Languages. 2 vols. 8vo. Ai Vola Ni Veryalayalati Vov ni Anda Twaga kei Na Nodai Vakabula Ko Jisu Kraisita. 1 vol. 12mo.

U. S. Patent Office. Official Gazette, July 15, 1873.

Willson, E. B. Miscellaneous pamphlets, 14.

By Exchange.

Buffalo Society of Natural History. Bulletin of. Vol. i, No. 2.

Iowa State Historical Society. The Annals of Iowa for July, 1873.

Kongelige Norske Videnskabers-Selskabs in Throndhjem. Skrifter i det 19de Aarhundrede 7de Binds 1ste Hefte. 8vo pamph.

Physikalisch-medicinische Gesellschaft in Würzburg. Verhandlungen Neue Folge, iv Bd., i Heft. 8vo pamph.

Société Vaudoise des Sciences Naturelles in Lausanne. Bulletin, Vol. xi. No. 68. 8vo pamph.

Université Royale de Christiania. Forhandlinger i Videnskabs-Selskabet Aar, 1871. 8vo pamph. Animal Life, by Geo. O. Sars. 4to pamph. Forekomster af Kise i Norge, by A. Helland. 8vo pamph. Anden Beretning von Ladegaardsens Hovedgaard, Forse Hefte. 4to pamph. On the Rise of Land in Scandinavia, by S. A. Sexe. 8vo pamph.

Publishers. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Silliman's Journal.

The President in his opening remarks alluded briefly to two ranges of territory located in the southern part of Essex County, favorable for the pursuit of the naturalist, and more especially of the botanist. One is a tract extending inland from the shores of Swampscott and Marblehead, and lying within the limits of Marblehead, Swampscott, Lynn, Salem, Peabody and Lynnfield, very diversified with rough and craggy hills, bowlders, beautiful ponds, woods and meadows, the habitat of many rare floral gems; with this tract is associated the name of Dr. Andrew Nichols, who was one of our most noted local botanists. He delivered a course of lectures on botany as early as 1816, and was the first President of the Natural History Society. He died in the spring of 1853, as the little *Draba verna*, a plant he took delight in finding, was expanding its tiny petals to another vernal season. The other is the range of woods in which we are now assembled, extending from Beverly to Gloucester and lying within the limits of these and the intermediate towns. Here are found many rare plants, as the Magnolia, Kalmia, Linnea, Cornels, etc. These woods may be considered, to an Essex County botanist, hallowed ground: here Dr. Cutler, some ninety years since botanized, and prepared in 1784 "An account of some of the vegetable productions naturally growing in this part of America, botanically arranged," which was printed in the first volume of the "Memoirs of the American Academy of Arts and Sciences." He also formed an arboretum of considerable extent adjoining his residence, and may be considered as one of the pioneers in botanical science in this country. He died July 28, 1823, having enjoyed in an eminent degree the confidence and honor of his fellow men. Dr. George Osgood of Danvers, as a pupil and friend of Dr. Cutler, may be mentioned in this connection. He was present at a meeting in this place some thirteen years since, and alluded to his residence in Hamilton about the beginning of this century, to his rambles through these woods with the venerable Cutler, from whose lips he learned his first lessons in botany and the study of nature, and during a long life had continued his interest in these pursuits, having derived from them much pleasure, happiness and instruction. He died May 16, 1863, at the age of fourscore. Dr. Osgood always spoke with much pride of the late William Oakes as once his pupil, who was wont to accompany him in his rambles and from him imbibed a taste for, and soon eclipsed his old instructor in botanical attainments. Mr. Oakes was a resident of the old town of Ipswich, and made extensive collections of plants gathered in these woods, and the name of Manchester had become famous as a botanical region, from being attached to the specimens which he preserved and so widely distributed.

The President then alluded briefly to some of the pleasing associations that cluster around this place. He spoke of an informal gathering of several members of the Natural History Society in July, 1836, when Benjamin Hale Ives, a very enthusiastic student of nature, was present and took a very active part in all the proceedings. By him more perhaps than by any other was the foundation laid upon which the present superstructure of our organization has been erected. He died on the twenty-sixth of the January following, at the age of thirty. At a meeting in 1850, a few members, consisting of Drs. A. Nichols and George Osgood, and Messrs. S. P. Fowler, Thomas Cole, George D. Phippen and others made explorations to collect specimens and then met in the parlor of the old farm-house,* that stood on the site of the present Chebacco House, to talk over such scientific topics as the occasion might have suggested. He also spoke of the meetings in 1860 and 1862. On these two occasions our friend Hon. Allen W. Dodge, who is with us this day, presided, and cordially welcomed the members and their friends to the town of his adoption. The numbers in attendance were large, and the meetings were very successful.

The President then introduced Mr. GEORGE D. PHIPPEN, one of the early members of the Natural History Society, who was present at the early meetings of the society in this place, and has always taken a great interest in its proceedings.

Mr. PHIPPEN then came forward and made further reference to the early explorations referred to, and alluded to the progress made in science not only from the early times of Winthrop, but through the influence of meetings such as these. He considered Dr. Cutler the first botanist who was indigenous to the soil, but he referred not only to him but also to the late Dr. George Osgood of Danvers, and others with whom he had himself rambled and pursued botanical investigations.

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*The house was a good specimen of the farm-houses of the last century, one story, gambrel roof in front and lean-to in the rear, running down near to the ground. In the open lawn in front was the well with a long well sweep; around and near it stood four ash trees, planted there, saith tradition, to keep the snakes from the well. It was known as "Knowlton's," being owned and occupied by an elderly lady of that name. Small parties frequented the place, bringing with them their own supplies. Mrs. Knowlton would prepare the repast, and a small fee and the remnants of the feast were considered an ample compensation.

The President then called upon Hon. ALLEN W. DODGE of Hamilton, to tell the company what he knew about the Rev. Manasseh Cutler.

Mr. DODGE said that Mr. Cutler was the second minister of the Hamlet Parish, as it was called at the time of his settlement, in 1771, it being a part of old Ipswich, from which it was set of in 1793, and given its present name, in honor of Alexander Hamilton, of whom the doctor was an ardent admirer,—his parishioners sharing in his feelings. Of the doctor, personally, Mr. Dodge said his reminiscences were rather dim, but he well recollected hearing him preach in his own pulpit, after he was compelled to sit through the sermon, as he did for years, owing to the asthma. He also remembered him at a large social gathering of the Col. Robert Dodge family, to which he (Mr. Dodge) belonged, when the doctor was the life of the party. It was at the same ancestral farm that witnessed these festivities that, at an earlier period, on the occasion of a barn-raising, the doctor led off a dance on the green with one of his church members, grandmother to the speaker, against which neither tradition nor the church record bears traces of any remonstrance. He was, in truth, always ready to contribute to the innocent recreation of his people, ready to minister to their wants, physical as well as spiritual, and ready to make the common schools of the town preëminently thorough in their instruction. To interest the people in the schools, he early instituted the custom of each committeeman giving either a dinner or a supper at every examination day; and on these occasions the doctor made even the roast turkeys and plum puddings to help on the good cause.

To show how free and familiar with him were his own people, one of them having written a work on the cultivation of the potato, and taken it to him for revision, said as he was leaving the house, "Now, doctor, if you think it worth printing, just stick in a little religion, now and then, and it will sell all the better!" Grotesque as this may seem to us, it was strictly in accordance with the times. That rare little book, by Dr. Jared Elliott, of Killingly, Conn., entitled "Field Husbandry in New England, as it is, or may be ordered," is interlarded with Scripture texts. As a specimen, after giving various receipts relating to the protection of crops and animals, he says he shall close the chapter with one receipt more, which is infallible and invaluable: "Seek first the kingdom of God and His righteousness, and all these things shall be added unto you."

Doctor Cutler was born in Killingly, Conn., May 3, 1742 (where Elliott, the author of this quaint old work, lived, preached and wrote); graduated at Yale College in 1765. He studied law and was admitted to the bar in 1767. Soon after quitting this profession he prepared for the ministry, and here entered on its duties, his first and only charge extending over a period of more than fifty years. Of course he lived in the war of the Revolution—the time that tried men's souls—and he served in it as a chaplain. On his return he studied medicine and practised as a physician among his parishioners for years after. As a preacher he was sound and instructive, not given to flights of oratory, but more intent on the edification of his hearers. He was a prompt man in the discharge of ecclesiastical as well as secular duties. Once, at a meeting of the Bible Society of Salem and its Vicinity, a question arose at the preliminary meeting, whether or not it should be opened with prayer.

The discussion began to wax warm, when the doctor, who was presiding, rapped on the desk and said, "Gentlemen, while the propriety of the duty is being discussed, the duty itself might have been performed. Let us pray!"

He received as boarders in his family, young men from out of town to fit for college, mercantile pursuits and navigation. He was well versed in astronomy, and for years kept a minute diary of the weather, the temperature, the winds, the diseases and the seasons, a couple of these manuscripts from 1780 to 1790, being among the archives of the Institute, witnesses of his painstaking accuracy in this department. But he was best known to his contemporaries by his knowledge of botany, both practical and scientific. He contributed to the Memoirs of the American Academy, papers on this and other scientific subjects. He was well known abroad, and his society and conversation were sought by many an intelligent foreigner. Among others was Count Castiglione, a distinguished Italian, who travelled in this country in 1785–7, and in his book speaks of his visit to Dr. Cutler. Doubtless he roamed with him through these woods, guided by him to rare and beautiful plants. The doctor's garden was full of flowering plants and trees. Among the rest was a grand old tulip tree, that lived to show, spring after spring, by its gorgeous blossoms, the worth of such a man, not to distant places only, but to his neighborhood as well, long after he had gone to his rest.

The efforts of Dr. Cutler in securing the passage by Congress of the ordinance of 1787, by which freedom was decreed to the whole northwestern territory, are perhaps not so fully known as in justice to him they should be. Mr. Webster was accustomed on all fit occasions to speak of them in terms of highest commendation. More recently, Mr. Poole, of the Cincinnati public library, has given a graceful and thorough account of them. Soon after, he organized, in Ipswich and the neighboring towns, the first band of pioneers for the settlement of Ohio. They took their departure from his door in a large wagon, bearing the inscription "Ohio, for Marietta on the Muskingum," firing a salute to the doctor with the muskets with which they went armed. They were followed the year after by Dr. Cutler himself, who rode all the way in a sulky, accompanied by a few friends.

In 1800, in acknowledgment of his signal services to the country and his vast acquaintance with men and affairs, he was chosen a representative to Congress. He served two terms in this capacity, his people at home willingly acquiescing in an arrangement that was so honorable to the man whom they loved and reverenced. It was on his visit to Philadelphia in 1787, while the Constitutional Convention was in session and while he was negotiating for the purchase of the Ohio lands, that he stopped at the house of Dr. Franklin, with whom he had corresponded, and found him at tea with his family on the lawn in the rear of the house. Of this interview he wrote out a full account. It is said to contain the best description of the great philosopher and statesman, both of his personal appearance, manners and dress, that has come down to us. It is copied by Sparks, in his life of Franklin, and is well worth the reading by every one who would get a most striking picture of him. But, said Mr. Dodge, the whole subject is too fascinating to be disposed of in a few brief remarks. He hoped that a full account would be given by one who had for years been gathering the materials for it, and was abundantly able to do justice to it—he alluded to the Rev. Edwin M. Stone, of Providence, R. I., formerly of Beverly in this county.

Prof. Asa Gray, of Harvard College, in speaking of the flowers about us and those found during the morning, alluded to plants having peculiar properties or aptitudes, and particularly treated of the so-called pitcher-plant (*Sarracenia purpurea*). One will ask what these pitchers are for, and looking into them we shall find a little dirty water and few or many flies or other insects drowned in it; now if we notice this "sun-dew" (*Drosera*), we shall see that flies, when they alight on the leaf, are caught and held fast by the clear drops which tip every one of the bristles that beset its upper surface. And, as if to make sure of this, within a few hours the surrounding bristles, which the fly had not touched, bend in one by one, and bring their sticky glands into contact with the fly, thus multiplying the bands that held him. Soon the leaf itself is seen to close round the insect, just as a man might close his hand, say upon a mouse. Now, before we make up our mind that this capture is accidental and meaningless, it is as well to consider why flies are more expeditiously caught by a near relative of the sundew, viz., the Venus-fly trap (*Dionœa*), of North Carolina. Here, when the fly alights on the leaf the two sides come together with a sudden motion; and the bristles, which are all on the margin, and destitute of sticky glands, by their intercrossing prevent escape, until the sides of the trap have closed down firmly upon the imprisoned insect.

Returning now to our pitcher-plant, it is naturally asked, What attracts the flies that are so copiously drowned in the water at the bottom? In this our northern species we know of no attraction beyond the water itself. But in at least one of the southern species (*Sarracenia flava*) a correspondent informs us that he has noticed a sweetish secretion just over the top of the tube, which is eagerly sought by flies, and which intoxicates them, so that they fall into the pit below. Once there, the stiff hairs of its lining, which, as in the species before us, all point downwards, prevent all return. Dr. Gray had this summer verified this statement as to the existence of the attractive secretion. Now in the case of the Dionæa the fly, after being caught, is *soon covered with a secretion from the inside of the leaf, and finally absorbed*, except the tough and fibrous parts: then the leaf opens and may catch another fly. Reasoning from this to the sundew, it may be inferred that this also catches flies with intemtion, and it may be suspected that either the juices of the fly are absorbed through the sticky glands, or that the ammonia etc., which is given off in decomposition is absorbed,—in either case affording food to the plant. And finally, if pitcher-plants are contrivances for catching insects, as they seem to be, Dr. Gray thought it most likely that the water they contain, charged as it is with the products of animal decomposition, is actually absorbed by the plant as a liquid manure, to its benefit.

S. B. BUTTRICK, of Salem, presented the following list of plants collected during the forenoon's excursion:—

Nemopanthes Canadensis,	Mountain Holly.
Verbena hastata,	Vervain.
Myrica Gale,	Dutch Myrtle.
Aspidium marginale and others,	Shield Fern.
Rhexia Virginica,	Deer Grass, or Meadow Beauty.
Eriocaulon septangulare,	Pipewort.
Lycopodium lucidulum,	
Aralia hispida,	Bristly Sarsaparilla.
Gerardia maritima,	Seaside Gerardia.
Cornus Canadensis,	Dwarf Cornel.
Lycopodium dendroideum,	Ground Pine.
Spiræa tomentosa,	Hardhack; Steeple Bush.
Spiræa salicifolia,	Meadow Sweet.
Monotropa uniflora,	Indian pipe.

Decodon verticillatum, ...	Swamp Loosestrife.
Pontederia cordata, ...	Pickerel Weed.
Brasenia peltata, ...	Watershield.
Nymphæa odorata, ...	Water Lily.
Clethra alnifolia, ...	Sweet pepper Bush.
Cassandra calyculata, ...	Leatherleaf.
Cephalanthus occidentalis, . . .	Buttonbush.
Vaccinium occycoccus, ...	Cranberry.
Sarracenia purpurea, ...	Sidesaddle Flower.
Drosera longifolia, ...	Long-leaved Sundew.
" rotundifolia, ...	Round-leaved "

Prof. George L. Goodale, of Harvard College, after a few brief remarks on several of the plants which he had noticed during the forenoon's ramble through these woods, so rich with floral treasures and possessing so many attractions not only to the student in botany but the lover of the picturesque in natural scenery, gave an interesting account of the cross fertilization of plants by the agency of insects.

Mr. J. J. H. Gregory, of Marblehead, expressed a desire to bring to the notice of the Institute the importance of teaching children the distinctive characteristics of the several poisonous plants and animals that are occasionally met with in their rambles; after some general remarks on this subject, he introduced the following resolution, which was adopted: —

Resolved, That so much instruction relative to insects, other animals and plants found in Massachusetts, should be given in her common schools, as shall enable the community to protect itself from bodily harm and banish all unnecessary fear.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 5. Salem, Mass., Sept., 1873. No. 9.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT CHEBACCO POND, TUESDAY, AUGUST 12, 1873.

[*Continued.*]

Mr. F. W. Putnam spoke on the fishes of the pond and gave an account of the general structure of fishes, and of the characteristic habits of several species, especially noting the mode of spawning of the horned pout and the bream, and the care which the pouts take of their young for some time after they leave the spawning nest.

The fishes taken with the seine by himself and Mr. Cooke during the morning consisted of the following species:—

Pimelodus catus, Horned Pout, not fully grown; *Esox reticulatus*, Pickerel, not fully grown; *Leuciscus Americanus*, Shiner, adults and young specimens about one inch in length; *Leuciscus pulchellus*, Chub, young specimens; *Perca flavescens*, Perch, adults and half-grown specimens; *Labrax rufus*, White Perch, adults; *Pomotis vulgaris*, Bream, adults, and young of from one-half to one inch in length; *Hololepis fusiformis*, Little Darter, adults.

A few other species, as the redfin, the sucker, the barred bream, the short-nosed pickerel, the banded minnow and the eel, are found in the pond, but none were taken to-day. The black bass has also been introduced and is said to be increasing in numbers.

Of the reptiles and batrachians the following were collected in the pond and on its shores:—

Chrysemys picta, Yellow-bellied Turtle; *Ozotheca odorata,* Musk Turtle; *Rana fontinalis,* Green Frog; *Rana sylvatica,* Wood Frog; *Bufo Americana,* Common Toad, young specimens near the water.

Other species are also found here, as the snapping-turtle, the spotted turtle, several snakes, salamanders, three or four other frogs and the tree toad.

Three hauls of the dredge were made across the pond, but the bottom proved very muddy and only a few fresh-water clams were obtained.

Quite a number of aquatic insects were collected, of species common to our ponds.

A large green caterpillar was passed to the table, and Mr. Putnam gave an account of its habits and the transformations it would undergo in developing from its present state, when it is known as the tomato worm, or larva of *Sphinx quinquemaculata,* to that of its winged condition, when it would become a large moth.

After passing a vote of thanks to Messrs. John Whipple & Sons for the use of their grounds, and for courtesies and civilities extended on this occasion, the meeting adjourned.

FIELD MEETING AT DANVERS CENTRE, FRIDAY, SEPT. 5, 1873.

THE fourth field meeting, the present season, was held at Danvers Centre, this day, postponed from the day preceding on account of unfavorable weather. The 9.25 train from Salem took the party to the Plains, where carriages were soon in readiness for conveyance to the meeting house, which was the place of gathering for the day. A somewhat informal meeting was then held, and the various points of interest designated, and then the party separated into groups and went in various directions, as inclination dictated; the botanists repaired to the woods; the larger portion, however, under the lead of very instructive guidance, visited several of the old houses that are invested with an historic interest; or the sites of others that had long since crumbled into dust, marked by a depression of the earth, with a few loose stones lying around.

The meeting house in which the party assembled is the one which accommodates the church and society that began in the year 1671, having been set off from the First Church in Salem at that time, and known in our early records as the Salem Village Church. The first house was built in 1671, and was connected with the witchcraft delusion and witnessed many of its trials. The second one was erected in 1700 upon the site of the present house, and stood until 1785, when it was voted to build another upon the same spot. This third house was destroyed by fire, Sept. 24, 1805. The society decided to have a new meeting house, which was built upon the same spot that the last house stood upon. This fourth house was of brick and was known as the "Brick Meeting

House." It was finished in 1806, and taken down in 1839, and in that year the fifth and present house was built. Rev. Charles B. Rice, the present pastor, was installed Sept. 2, 1863. His predecessors were James Bailey, 1671 to 1680; George Burroughs, 1680 to 1683; Samuel Parris, 1689 to 1696; Joseph Green, 1698 to 1715; Peter Clarke, 1717 to 1768; Benjamin Wadsworth, 1772 to 1826; Milton P. Braman, 1826 to 1861—a list of revered and honored names of men who, in their times, were distinguished for their learning and piety.

The general aspect of the town is rather level, though it is diversified with numerous elevations. The land appears to be well adapted to agricultural purposes, and is dotted with workshops of the manufacturing industries that add so much to the thrift of many of our New England towns.

The common at Danvers Centre is a place of some interest, from the fact that it was given to the village "for a training place forever," by the will of Nathaniel Ingersoll, the leading man of the village. It has doubtless been used as a parade ground from the earliest times; and the rudiments of military practice have probably here been imparted to those who have taken up arms against the Indians, the French and the British.

Danvers has, from the earliest times, been closely identified with the prominent events in our history. With the exception of the town most directly concerned by locality, it gave up more victims than any other in the Lexington fight. It was the abode of the first and also of the last British governor of Massachusetts. The Collins House, now owned by Mr. Francis Peabody, has been greatly improved by him without disturbing the old fashioned aristocratic appearance of the place, and is always an interesting object of contemplation, partly from the beauty of its surroundings and partly from the fact that it is the place where Gov. Gage formerly had his headquarters. Gen. Gage, before he took command of the British forces in the colonies, was governor of Montreal. He did not succeed well as governor of Massachusetts, and went back to England before independence was declared, though he had enough to do with the inauguration of our revolution to set on foot the expedition which resulted in the battle of Lexington. He lived long enough to see our independence acknowledged, and died in 1787, the year when our present constitutional form of government was adópted. Gov. Endicott came over, the first governor, in 1628, and, on April 30, 1629, he was elected governor for one year; but, meantime, the charter and Company were transferred to New England, and John Winthrop, who had joined the Company, was elected governor six months afterwards. Gov. Endicott resided at what is now Danversport, and Gov. Gage, at the Collins house, as above stated, though it was but a temporary residence.

But the section of the town where the meeting was held is especially interesting from the fact that it was the region where most of the "Salem Witchcraft Delusion" took its rise. The first meeting house of Salem Village stood not many rods from the present structure, on Hobart street, near the house of Mr. Hiram Hook. The first minister of the Salem Village church was James Bailey, and he lived in a house occupying the site where now stands the house of Mr. Benjamin Hutchinson near the old road leading from the old meeting house to the Plains, and not far from the Tapleyville village. On this same road, not far from the Plains, and near the gravel pit, may still be seen the remains of the old cellar of the house of Nathaniel Putnam, who figured during the witchcraft period. It was one or more of his horses that George Jacobs, Jr., was charged with drowning, though with no very conclusive evidence, as the horses were trespassing, and were probably drowned while being driven away. With reference to Mr. Bailey, the first minister, it may here be said that great opposition arose to him during his ministry, and a series of serious troubles, jealousies and hard feelings followed.

The Samuel Parris house stood upon a piece of land now owned by Messrs. E. and A. Mudge, and was formerly a part of the 'parsonage. The place is marked by a signboard which bears this inscription: "Site of the first parsonage house occupied by Rev. Samuel Parris in 1692." It is believed that some of the material of which this house was built was put into a shed or outbuilding connected with the old Wadsworth house, which is on the main road, and not far distant. It has been supposed that the small building standing opposite and near to the Collins house was a part of the old Parris house; but this has been well ascertained not to be the case in the sense in which the identity has heretofore been understood. While the small building referred to was a part of the Parris house, it was an addition to that structure which was not put on until full forty years after the witchcraft delusion. The building is old, and is now used by its owner, Mr. Solomon Morrison, as a residence for one cow and several pigs.

Near to the house of Samuel Parris is a ridge of land of curious geological formation, known as "Watch House Hill." This is so called, because, in the early days of the settlement, a house was erected here from which a watch was kept in anticipation of Indian raids.

The Rebecca Nourse house is one of the oldest in town.

It is situated, some distance in the field, on the Salem road leading out from Tapleyville, and is quite near the carpet factory. It is now owned by Mr. Orrin Putnam, and remains in a good state of preservation. There is an orchard in front of it, an inclosed burial lot twenty or thirty rods to the west, and the surroundings indicate quite a thrifty farm.

At Samuel Parris's house, for a year preceding the breaking out of the delusion in full force, a circle of girls met and practised the arts of fortune-telling. Among these were Mary Walcott, Mary Warren and Ann Putnam. Mary Walcott, who was a daughter of Jonathan Walcott, lived at the time in a house on the field northeast of the common, now owned by Mr. Moses Prince.

One of the pleasant drives during the day was that which a small party took in company with Mr. Mudge and Mr. Wm. R. Putnam. It extended through the fine estate of Mr. George Peabody, which is one of the most attractive in this part of the town, over the Newburyport turnpike to the farm of Mr. Francis Dodge on Hathorne's Hill, and thence down upon the other side to Mr. Wm. R. Putnam's house, which is historically distinguished by something more creditable than witchcraft, namely, as being the birthplace of Gen. Israel Putnam, of French war and revolutionary fame.

Hathorne's Hill is put down on some of the county maps as Prospect Hill, though Dodge's Hill is perhaps as familiar a designation as any in the neighborhood. We do not know how many hills there are in Essex County, each claiming to be the highest, but this certainly is spoken of as the highest in the southeast part of the county. It commands a very wide and extensive prospect of the surrounding country, including all the neighboring towns and villages, Wachusett, and a number of the prominent mountains in the southern part of New Hampshire. The vessels and islands of the harbor can be seen, and the venerable Mr. Samuel Preston informed us that he has counted over fifty church steeples from this summit. The farm which includes this hill was part of the old Hathorne grant, that originally came down to the brook which runs through the Peabody farm. It has been successively owned by Mr. Ray, Eben Porter, James Prince, Nathaniel Ingersoll (son of Capt. Jona.), Capt. John Andrew (who built and owned Mr. James O. Safford's present mansion near the common, in Salem), Capt. Stephen Wilkins, John Dexter (who came from Essex), and Francis Dodge, the present owner and occupant. Mr. Dodge married a daughter of Samuel Preston, and sister of Miss Harriet Preston, the authoress. Mr. Preston, who is now eighty-one years of age, was here at the farm at the time of our call, and showed us around with great apparent pleasure, cheerfulness and activity. His room in the farmhouse was very interesting, a fine old English ivy, which extended nearly all the way around the room, claiming special attention. Capt. Andrew, during his ownership, planted a grove of English oaks on this hill, which are now vigorous and thrifty. This farm has recently been offered, with some forty-two acres belonging to Mr. W. R. Putnam, making two hundred acres in all, as a site for the new State hospital for the insane. It is certainly a fine situation.

The Israel Putnam house, at the foot of the hill, is a mansion bearing every mark of comfort, inside and out. The larger portion of the house is not conspicuously old, there being not much left of the original part beyond the portion containing the two rooms which formerly constituted the one in which Gen. Israel was born. The farm descended from Thomas Putnam, to whom it was originally granted. From Thomas it came to his son Joseph, then to Lieut. David (who was a brother to Gen. Israel), then to his son Israel, then to Daniel, and finally to William R., the present occupant. Mr. Putnam and his sister were very kind in showing the old relics, and the visit was really one of much pleasure. Gen. Israel Putnam is of course remembered as a man who, even in his boyhood and youth, was characterized by a spirit of daring and intrepidity. He was born Jan. 7, 1718, and at the age of twenty-one married Hannah Pope, of Salem, and removed to Pomfret, Conn. He commanded a company during the French war, was Major General at Bunker Hill, and died May 19, 1790, aged 72.

At the roadside, close by the church, stands the old tavern, now a dwelling house, in which the genial widow Smith ministered to the wants of weary travellers, and higher up is the parsonage, which was once used for the same purpose. Every house has its history, and every history finds some willing tongue to publish its wild and thrilling narratives. At the house of the Rev. Mr. Rice, the pastor, are to be found the records of the parish during those troublous times when Bailey and Parris presided over the church, and many quaint specimens of penmanship and rhetorical beauty were noticed on their pages.

At the close of the rambles and examination of the old records, the company gathered in the basement of the church and partook of refreshments. Here tea and coffee were furnished, and the citizens showed a degree of hospitality that was quite commensurate with their courtesies and attentions during the day.

The afternoon session was held in the church at 3 P. M. The PRESIDENT in the chair. Records of preceding meeting read.

The Secretary announced the correspondence :—

From Charles F. Crocker, Lawrence, Aug. 15; Pardee & Chamberlin, Fulton, N. Y., Aug. 31; W. F. Poole, Cincinnati, Ohio, Aug. 23; Charles B. Rice, Danvers Centre, Aug. 21; S. J. Spalding, Newburyport, Aug. 30; E. R. Sullivan, Zanesville, Ohio, Aug. 23; E. N. Walton, Salem, Aug. 26; A. Williams & Co., Boston, Aug. 15; Marshall P. Wilder, Boston, Aug. 15; U. S. Bureau of Education, Washington, Sept. 1; Buffalo Historical Society, Aug. 22.

The Librarian announced the following additions : —

By Donation.

Appleton, Francis H., of Peabody. Miscellaneous pamphlets, 25.

Lee, John C. Commercial Bulletin, July 26, Aug. 2, 9, 16, 1873.

Morse, E. S. On the Systematic Position of the Brachiopoda, by donor. 8vo pamph. Boston, 1873.

Munsell, Joel, of New York, N. Y. Albany Penitentiary Laws for 1872. 1 vol. 8vo. Miscellaneous pamphlets, 16.

Peabody, Alfred. San Francisco Directories for 1852-3, 1859. 2 vols. 8vo. Manual of the Corporation of San Francisco, 1853. 1 vol. 8vo.

Perkins, A. T., of Boston. Copley's Life and Paintings, by A. T. Perkins. 1 vol. small 4to. Boston, 1873.

Rice, Chas. B., of Danvers. Centennial Celebration at Conway, June 19, 1867. 8vo pamph.

U. S. Patent Office. Official Gazette, July 22, 29, Aug. 5, 12, 1873. General Index of "The Official Gazette." 1872.

By Exchange.

Bibliothèque Universelle et Revue Suisse. Archives des Sciences physiques et naturelles, Mai, Juin. Nos. 185, 186. 1873.

Georgia Historical Society. Collections of. Vol. iii. 1 vol. 8vo. Savannah. 1873.

Publishers. American Naturalist. Forest and Stream. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Western Lancet.

The President in his opening remarks mentioned that this is the first time that the Institute has held a meeting in this spot, so full of historic incidents, some of which are of national importance, although it has convened in three other places in the town.

It possesses some attractions to the naturalist. Within a short distance in one direction is the locality where William Oakes, the noted botanist of Essex County, and his friend, Dr. George Osgood, of Danvers, discovered the *Vaccinium vitis-idæa* (a species of cranberry), a very rare plant in this section of the state. It is said that after a fatiguing ramble at the close of a summer's day, in the year 1820, in search of botanical specimens, upon the finding of this plant Oakes raised his hands above his head and with all the enthusiasm of an ardent lover of nature exclaimed, "we have found a rare plant that will repay us for our toil." In another direction, near the intersection of the Andover and Newburyport turnpikes, is the place where is found occasionally the rare toad *Scaphiopus solitarius.* We well remember the enthusiasm which our late esteemed friend, Dr. Andrew Nichols, manifested, when conducting us to that place in June, 1843, where a small pond, usually dry in the summer months, was filled with these toads and the tadpoles in the various stages of growth. This toad never appears except under a peculiar combination of circumstances, that only occurs at intervals of several years. Other incidents might be cited of equal interest to the student of nature, but time will not permit a further digression in this direction.

The President then gave a brief review of the work of the society and its objects, which he said was to collect materials for the natural and civil history of the county, and to cultivate a taste for the study of the sciences and the arts, and to promote the general culture of the community.

Mr. F. W. PUTNAM, of Salem, was then introduced, and gave an account of the doings of the recent meeting at Portland of the American Association for the Advancement of Science, and also of the work of Prof. S. F. Baird, as U. S. Commissioner of Fisheries, located at Peak's Island in Portland Harbor the present season, in carrying out the objects of his mission. He exhibited a sketch of the feather of the ruddy duck, its structure being very peculiar, consisting of two feathers, in fact; the first an odd or deciduous feather, which was pushed up from the flesh by the true feather, in a similar manner to the first teeth of the child, which are pushed out by the second. He said that this was a contribution to science by Dr. Elliot Coues, U. S. A., and that it would be published with a cut in the *American Naturalist*.

Mr. Putnam presented the following paper by Dr. CARPENTER:—

ON THE GENERIC AFFINITIES OF THE NEW ENGLAND CHITONS.

BY PHILIP P. CARPENTER, OF MONTREAL.

IT has been common with conchologists, even of the "advanced" school, to call every mollusk with eight valves a *Chiton*, except the vermiform species, which Lamarck separated as *Chitonellus*. The consequence has been that very little is known of most Chitonidæ, except the external characters; the differentiation shown in the soft parts, and even in the shelly valves, having been overlooked.

We have been fortunate, during the explorations of the United States Fish Commission, in observing four species alive; another was taken alive at Eastport last year; a sixth has been captured on the southern coast. These are all as yet known to inhabit the American Atlantic seas, from Labrador to Florida. A seventh, called *Chiton cinereus*, is said to have been taken alive by Dr. Pickering, and to be in the collection of the Philadelphia Academy of Natural Sciences; but it may prove to belong to one of the other species, or to be a ballast specimen.

The six authentic species present well-marked characters, ranging under five genera.

It may be premised that the Lamarckian genus Chiton was first divided by the Rev. L. Guilding, according to the external characters of the West Indian species. About the same time, the Rev. T. Lowe published the peculiarities in the insertion plates of the British species. Both papers appeared in the "Zoological Journal." Dr. Gray, however, was the first to present, in the Proc. Zool. Soc., a full description of the forms of Chitonidæ, accurately arranged under genera and sections, partly according to the external, but principally according to the internal characters. Mr. Henry Adams, in compiling the "Genera" from H. Cuming's collection, was not allowed to examine the insertion plates. He thought he saw, however, a correlation between the internal and external marks; and accordingly redescribed Gray's genera, with lists of species, according to the surface diagnosis. Gray in his "Guide" unfortunately copied from H. Adams' list without examination. Lastly Chenu, as usual, reproduced the mistakes of H. Adams, with fresh ones of his own.

Having had unusual opportunities of dissecting-out the valves of Chitons, I have felt compelled to rectify the previously published lists, and also to propose various new genera. These I communicated to Mr. Binney, while his edition of Dr. Gould's "Invertebrata" was passing through the press; but he did not think well to alter the position of every one of our species, as I feel compelled to do.

1. The *Chiton apiculatus* does not appear in H. Adams or Gray. It is a true *Chœtopleura;* distinguished by the thin hairy girdle, regular valves with sharp teeth, and long series of gills. I have not seen it alive. It ranges from southern Massachusetts to Florida. The genus is for the most part tropical.

2. The *Chiton ruber* is *Leptochiton ruber* of H. Adams; and is probably *Callochiton puniceus* Couth. of the same author. It is the *Tonicia rubra* of Gray's "Guide," to which he adds as synonymes in P. Z. S., *marmorea* and *fulminata;* and it also appears in Gray's "Guide" as *Corephium? rubrum.* It has not the characters of either of these *four* genera, in which our two best authors have placed it. It belongs to Gray's genus *Ischnochiton* (= *Lepidopleurus* H. Ad., *not* Risso) section †, "mantle-scales minute, granular;" but as the gill-rows are short, instead of surrounding the foot as in the typical species, it is necessary to establish a fresh genus, *Trachydermon.* The insertion-plates are, as in *Ischnochiton* and *Chœtopleura*, regularly slit and sharp all round. Mr. Emerton first observed a great peculiarity in the animal; that there is a cancellated space between the posterior gill and the caudal extremity. Prof. Verrill observed that in different specimens there were either one, two or three rows of holes on each side. The caudal lobe is generally figured as an anal tube, but in truth it is an imperforate muscle, working the posterior part of the girdle. The fæces were distinctly seen to escape, sometimes on one side, sometimes on the other; as it appeared to me, from a slit on each side.

3. The *Chiton albus* is *Leptochiton albus* of H. Adams, = *sagrinatus* Couth. I twice captured a live specimen, but each time it eluded the after-search. I do not doubt that this is also a *Trachydermon*, but cannot vouch for the peculiar characters above quoted. The genus belongs, in the main, to cold and temperate seas.

4. The British *C. marginatus* is also a *Trachydermon* and not a *Lep-*

tochiton. It is the *C. cinereus* of Lovèn, Forbes and Hanley; but not of many other writers. Of the unique American shell, so called, I can say nothing.

5. The *C. marmoreus*, common at Eastport and northwards to Greenland, is *Tonicia* of H. Adams and Gray, simply because the girdle is smooth. The true southern *Toniciæ*, however, have pectinated insertion-plates and ambient gills, like the typical Chitons; while the northern species, so called, have sharp plates and short gills. They differ in fact from *Trachydermon* simply in the girdle being destitute of the minute scales. I distinguish the group as *Tonicella.*

6. The *C. mendicarius* does not appear in the lists, and is probably unknown in Europe. Fortunately a very few specimens were dredged by the "Bluelight," one of them smashed, but very large. It is known outside by the minute bristles on the girdle; but within it presents the very abnormal characters which had before been observed only in the minute British *C. Hanleyi.* This appeared as *Leptochiton Hanleyi* in Gray's first paper, but as *Acanthopleura Hanleyi* in his "Guide," p. 183. But in the same book, p. 186, the same species reappears as *Hanleya debilis*; the genus (constituted for that species alone) being said to have lateral tufts of spines; insertion plates entire, of terminal valves alike. H. Adams, following this diagnosis externally, described other species which really had these spine-tufts, though not the internal characters. However, on examining every specimen of the species in the market, I could not discern a single spine-tuft, though announced by the accurate Lovèn. I found, however, excellent internal characters. All the valves were destitute of insertion plates, except the anterior one, which really was entire, having one continuous plate, not slit. I did not know whether to believe my own eyes, or the testimony of Lovèn and Gray, till Prof. Verrill allowed me to open the large smashed specimen of *C. mendicarius.* It proved to be a true *Hanleia*, according to my diagnosis, but not according to Lovèn and Gray. I presume that the contraction of the skin, in so minute a shell, led to the appearance of tufts, and that Dr. Gray supposed that the posterior valve had an entire plate like the anterior. I should be glad of the opinion of others, whether the genus *Hanleia* should follow the type against the diagnosis, as here given; or an unreal diagnosis against the type, as followed (in part only) by H. Adams. The animal of this species resembles *Leptochiton* in having short posterior gills, and a central anal tube from which the fæces were seen to exude.

7. A similar confusion attends the last and most remarkable species, *C. Emersonii.* Several live specimens were dredged by the Bluelight. one of extraordinary size; and still more have been dredged by Pl. Dawson at Murray Bay. For the original species, *C. vestitus,* from

Alaska, a genus *Amicula* was constituted by Gray, characterized by covered valves and regular pore-tufts. The elder Sowerby figured the *Emersonii* as *vestitus* in his Conch. Illustr. Hence Dr. Gould naturally looked for the pore-tufts, and found them. Having received a fresh specimen from Dr. Stimpson, I could not find them. I wrote to Dr. Gould, who sent me his type specimens with sketch of regular pore-tufts, as he saw them; but still I could not. He died without clearing the difficulty; and I presumed there might be two species, one with and one without pores. But after examining both northern and southern suites of specimens, I feel confidence in stating that there are no true pores; but simply a profusion of hair bunches, generally very irregular, but sometimes, in early stages, more conspicuous at the sutures. I propose, therefore, to keep the name *Amicula* for the Alaskan pore-bearing species; and to name this (with the Alaskan *Pallasii*), *Stimpsoniella*, in honor of one of the best naturalists born in New England. In this genus, as in *Trachydermon*, the fæces are expelled through slits close to the caudal lobe, one on each side. When at rest, the creature makes a posterior fold in the girdle, corresponding to the wave in the posterior valve.

I should be extremely indebted to any gentlemen who would lend me unusual Chitons for examination, previously to the publication of my "Contributions towards a Monograph of the Chitonidæ" by the Smithsonian Institution. There is also a great field open for investigation to all those who can examine living chitons, or even dissect alcoholic specimens. It is known that the external characters are not coördinate with the internal ones; it remains to be found out whether either of them correlate with the anatomical characters of dentition, gills, vent, etc., which ought to furnish the best divisions in arranging this difficult group.

The Secretary, Mr. JOHN ROBINSON, gave an interesting account of the botanical work in the morning. His remarks were chiefly confined to a description of the ferns found during the excursion, as follows:—

Among the rarer ferns in this region is *Phegopteris polypodioides*, a fine specimen of which was collected by Miss Page this morning. This and its associate, *P. dryopteris*, are only to be found in a few localities in this county, while north and south they are very abundant, particularly near mountain streams. Of the other New England ferns that are rare, or not as yet found here, may be enumerated *Struthiopteris Germanica*, *Ophio-*

glossum vulgatum, *Adiantum pedatum* (maiden hair), *Asplenium thelypteroides*, *Phegopteris hexagonoptera*, *Aspidium aculeatum*, *A. Goldianum*, *Cystopteris bulbifera*, *Lygodium palmatum* (climbing fern), and some species of *Botrychium*. To these may be added as impossible to find, the mountain species, *Aspidium fragrans*, *Woodsia glabella* and the limestone ferns. I know only one locality in this county for the *Ophioglossum*, or the climbing fern; the maiden hair is abundant in one town and can be found sparingly throughout the county. It is very doubtful if *Asplenium thelypteroides*, *Cystopteris bulbifera* or *Aspidium aculeatum*, can naturally grow here, but it is to be hoped that *Aspidium Goldianum*, *Phegopteris hexagonoptera* and the *Struthiopteris*, as well as some of the rarer species of *Botrychium*, may yet be found in some of the beautiful nooks of which our county has so many. For three seasons past I have searched faithfully in this vicinity for the native ferns, and have been rewarded each season by the finding of species not known, or at least not noted by any collector, as indigenous to this county. Nearly all our ferns can be cultivated with success in the garden if a shady portion can be devoted to this purpose. They throw out their beautiful fronds and often hide some unsightly fence, or fill the crevices between stones, with their delicate green foliage.

Rev. E. C. Bolles, of Salem, in giving his account of the findings during the forenoon, spoke particularly of the minute fungi, which feed upon plants as certain insects feed upon other insects. He illustrated his remarks upon the blackboard, and in closing alluded to the importance of the study of these minute forms, especially to agriculturists, as many of the crops are affected more or less by these parasitic plants.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 5. Salem, Mass., Oct., 1873. No. 10.

One Dollar a Year in Advance. 10 Cents a Single Copy.

Field Meeting at Danvers Centre, Friday, Sept. 5, 1873.

[*Continued.*]

The President presented the following paper, found among the archives of the Institute :—

"Our Breath'n & Neibours at y^e ffarmes Request."

To the respective Towne of Salem.

Wee whose names are vnder writen desire to informe you of our condition by reason or Habytations are distant from our publike Meeting house at least four miles vpon the rode the neerist, the farthist about 8 or 9; if one or two of a great family goeth to meeting, the rest being Children and Servants tarry at home And wee feare spend the day vnprofittably if not pfainly, and in consideration herof wee all judge the afflicted state of y^e body ought to bee relieved how much more the condition of Soules. Wee feare if not releeved that our Children will bee as the Hethen whome God droue out before vs. Therefore or humble request is that you will be pleased to take into yor Christian consideration our condition either to pvide for vs a Minister and so maintaine him in Common that so we may injoy the word of God amongst vs, or be pleased to dismisse to vs such anumber of ffamilies as liueth remote from y^e Towne so as that wee may bee able to maintaine a Minister amongst our Selves, & if the Towne be pleased to leave vs distinct to orselves then our desire is to begin at y^e Horse bridge to Serg^t Leaches, Jacob Barney, Sarg^t Porter, Mr. Endecot to the wooden bridge swamp & the inhabitance beyond y^e River & so we desire to waite vpon God for helpe & his assistance and vpon you for yor loveing answer.

The 4 : 12, $\frac{68}{69}$
Joseph Houlton.

Rob't Prince,
Jonat, Knight,
James Hadlock,
Joseph Herick,
Tho. Small,
Jno. Burton,
Jno. Gingel,
Tho. Wilkins,
Philip Knight,
Jno. Simson,

Rich. Hutchison,
Thomas Putnam,
Bray Wilkins,
Nath'l Putnam,
Jno. Putnam,
Thomas Fuller,
Josh. Rea,
Joseph Hutchison,
Nath'l Ingerson,
Jno. Wilkins,
Henry Keny.

Rev. Charles B. Rice, the pastor of the church, spoke words of welcome and expressed his gratification that the meeting was held in his church, and alluded to some of the old historical houses, of which not a vestige now remains.

Mr. David Stiles, of Middleton, being called upon, spoke of the old Townsend Bishop house, and exhibited pieces of the wood of the house which he had recently taken from the ridgepole and narrated some interesting reminiscences. He alluded in the highest terms of commendation to the services rendered to this community by Mr. William P. Upham, in making us better acquainted with the many interesting incidents connected with our early history, whilst collecting materials for his father's admirable work on the Salem Witchcraft.

Dr. **Jeremiah Spofford**, of Groveland, spoke of the geological evidence that the Merrimac River once emptied into the ocean by another channel south of its present one.

Dr. Spofford then alluded to the remarks of Mr. Putnam on the restocking of rivers, especially the Merrimac, with fish, and questioned the success of the plan.

A discussion followed, participated in by Messrs. J. Spofford, F. W. Putnam, C. P. Preston, and others; during which Mr. Putnam made a statement as to the results already attained by the several Fish Commissioners, and urged that they be aided in their work, as the principles, upon which the experiments were being made, were sound, and if the people would have patience and assist the Commissioners in their efforts, he believed the day would not be far distant when salmon and shad would again be plenty in our rivers.

Mr. **Augustus Mudge**, of Danvers Centre, spoke of the important work done by the Institute at their meetings, and was gratified to have a meeting in his town. He alluded in highly complimentary terms to Mr. Upham's valuable history of the Salem witchcraft, which he said was of inestimable worth to students of history; but the great mass of the people could not devote their time to its study. He said that there was a little book called "Witch Hill," which was admirably adapted to popular reading. He spoke of the local history of the place, and said that the first and last English governors of Massachusetts resided in Danvers — Gov. Endicott and Gov. Gage, the one at his farm near Danversport, the other at the Collins House, now owned and occupied by Francis Peabody, Esq. The house where Gen. Israel Putnam was born still stands about one mile away, and a number of the ancient witch houses are still in existence in various parts of the town.

Mr. William P. Upham, of Salem, related some facts about the original Parris house, the birthplace of witchcraft. Some distance from the site of the house stands another house, a part of which was supposed to be a part of the original Parris house; but which proves to be an addition built in the eighteenth century and which was moved away. He exhibited, however, a well authenticated fragment of the old house which came from a shed built of the pieces of the house when it was torn down. He also exhibited some pears gathered from a tree planted by the Rev. Mr. Bailey, the first minister of the parish.

Mr. George Tapley, of Danvers, spoke of the Hon. Samuel Holton,* a very noted, prominent and influential citizen in the annals of the town, and paid a fitting tribute to his memory. The mansion in which he resided for many years is still extant and is near to this place of meeting. Mr. Holton was a man of great integrity and ability; courteous and unaffected, enthusiastic in promoting the cause of liberty, yet dignified, firm and prudent in all his actions. His long and faithful services in various important stations, legislative as well as judicial, have caused his name to be cherished with gratitude and respect.

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*Samuel Holton, the only son of Samuel and Hannah (Gardner) Holton, was born at Salem Village, now Danvers, June 9, 1738. In early life a successful practitioner of medicine. His public career commenced in 1768, when he was elected a representative to the general court from Danvers. He was eight years a representative, five years a senator, and twelve councillor, in Massachusetts legislature, five in congress under the confederacy and two under the Federal constitution, a member of the constitutional convention of 1780; a delegate to the State convention for ratifying and adopting the Federal constitution, twice served as presidential elector. For thirty-two years a justice of the court of common pleas for Essex, being for half of that time the presiding justice, a judge of probate of Essex from July 2, 1796, to May 29, 1815. He also discharged the duties of several town offices and other public and private trusts. He died Jan. 2, 1816, and tributes were paid to his memory by numerous grateful hearts and a sermon was preached at his funeral by the Rev. Dr. Benj. Wadsworth, which was published and widely circulated.

Mr. S. B. **Buttrick**, of Salem, presented the following list of plants observed by him during the excursion in the forenoon:—

Gerardia purpurea,	Purple gerardia.
" tenuifolia,	Slender gerardia.
Eupatorium purpureum,	Trumpet weed.
" perfoliatum,	Thoroughwort.
Spiræa salicifolia,	Meadow sweet.
" tomentosa,	Hardhack.
Arum triphyllum,	Indian turnip (in fruit).
Nabalus albus,	White flowering lettuce.
Mulgedium leucophæum,	Blue lettuce.
Onoclea sensibilis,	Sensitive fern.
Cuscuta Gronovii,	Dodder.
Rudbeckia laciniata,	Tall cone flower.
Apocynum androsæmifolium,	Dogsbane.
Typha latifolia,	Reed mace (in fruit).
Trichostema dichotomum,	Blue curls; pennyroyal.
Lespedeza capitata,	Headed bush clover.
Oxalis stricta,	Yellow wood sorrel.
Cichorium intybus,	Succory.
Lobelia inflata,	Indian tobacco.
" cardinalis,	Cardinal flower.
Brunella vulgaris,	Common selfheal.
Eriophorum polystachyon,	
var. angustifolium,	Cotton grass.
var. latifolium,	" "
Goodyera repens,	Rattlesnake plantain.

Mr. F. W. **Putnam**, after some appropriate remarks, introduced the following resolution, which was unanimously adopted:—

Resolved, That the thanks of the Essex Institute be presented to the proprietors of the First Congregational Church and to the citizens of Danvers generally for their generous and kind attentions, which have contributed so much to the pleasure and interest of the day.

Messrs. J. Fletcher, of Lawrence, and J. Henry Badger and Edgar Vivian, of Salem, were elected resident members.

Adjourned.

* * *

SPECIAL MEETING, THURSDAY, SEPT. 11, 1873,

Was held this evening, commencing at 7.15 o'clock, in the Whitefield church, Newburyport, for the reading of a memorial address by Rev. SAMUEL J. SPALDING, D.D., upon the late HENRY COIT PERKINS, M.D., of Newburyport, an interested and esteemed member of the Institute.

The following exercises were observed on this occasion:

1. Hymn.—"The spacious firmament on high."
2. Reading of Scripture and Prayer, by Rev. R. Campbell.
3. Singing.—"Blessed are the dead who die in the Lord."
4. Address by Rev. S. J. Spalding, D.D.
5. Singing.—"God who madest earth and heaven."
6. Benediction.

The singing was by a quartette under the direction of Mr. Wm. P. Dodge.

The thanks of the Institute are due to Rev. Dr. Spalding for his faithful and correct delineation of the character and services of our late associate. The request for a copy of the address for publication has been freely granted, and the same will accordingly be printed in the twelfth volume of the "Historical Collections."

Regular Meeting, Monday, Oct. 6, 1873.

Meeting this day at 4 P.M. The President in the chair.

John G. Barker, of Lynn, was elected a resident member.

Regular Meeting, Monday, Oct. 20, 1873.

Meeting this evening at 7.30 o'clock. The President in the chair. Records read.

The Secretary announced the following correspondence :—

From E. C. Bolles, Sept. 12, 15; E. P. Boow, New York, Oct. 6; Henry I. Bowditch, Boston, Sept., Oct. 10, 18; E. C. Cowles, Ipswich, Sept. 29; J. E. Deane, New York, Oct. 17; William J. Fletcher, Lawrence, Sept. 8; John C. Holmes, Detroit, Mich., Oct. 6; F. B. Hough, Lowville, N. Y., Sept. 13; S. G. Howe, Boston, Sept. 27; T. Morong, Ipswich, Sept. 20, Oct. 4, 8; J. R. Nichols, Haverhill, Sept. 28; A. Osgood, Newburyport, Sept. 8; G. D. Phippen, Sept. 12; S. C. Rodgers, Troy, N. Y., Sept. 30; J. L. Robinson, Wenham, Oct. 7; Edward E. Rice, Boston, Sept. 30; Rogers Stuart, Providence, R. I., Oct. 14; George Russell, Boston, Sept. 27; John J. Somes, Gloucester, Sept. 9, 12, Oct. 6, 14; S. J. Spalding, Newburyport, Sept. 13, 20, Oct. 10; J. M. Thompson, Sept. 5, 9; Henry E. Waite, West Newton, Sept. 20; Charles A. Walker, Chelsea, Sept. 26, Oct. 8; W. C. Wood, Wenham, Oct. 18; W. H. Yeomans, Columbia, Conn., Sept. 22; American Geographical Society, Oct. 11; Berlin, Akklimatisations Verein, June 26; Buffalo Historical Society, Oct. 7; Essex Horticultural and Agricultural Society, Oct. 1; Liege, Société Royale des Sciences, July; Liverpool, Royal Institution, Aug. 21; New York Historical Society, Oct. 10; New York Genealogical and Biographical Society, Oct. 2; New York Lyceum of Natural History, Oct. 6; New York State Library, Oct. 2; Paris, Société Anthropologique, Juin 12; Vermont State Library, Oct. 1.

The Librarian reported the following additions :—

By Donation.

Barlow, John. Acts and Resolves of Mass. Leg., for 1869. 1 vol. 8vo. Annual Report of the Adjutant General of Mass. for 1862. 1 vol. 8vo. Seventh Annual Report of the Board of State Charities of Mass. for 1869–70. 1 vol. 8vo.

Bemis, Luke, of West Chester, Penn. History of Delaware County, Penn., by Geo. Smith, M. D. 1 vol. 8vo. Phila., 1862. History and Directory of Norristown and Bridgeport, 1860–61. 1 vol. 12mo.

Green, Sam'l A., of Boston, Mass. Miscellaneous pamphlets, 16.

HAYDEN, F. V., of Washington, D. C. Acrididæ of North America, by Cyrus Thomas, Ph. D. 4to pamph.

LEE, JOHN C. Commercial Bulletin for Sept. 13, 20, 1873.

MERRITT, L. F. Shanghai Budget and Weekly Courier for July 12, 19, 26, Aug. 2, 9, 1873.

NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletin July–Sept., 1873.

NORTON, M. E. B., of Rockford, Ill. Catalogue of the Officers and Students of Rockford Seminary for 1864, 1865–6, 1867–8, 1868–9, 1869–70, 1872–3. 6 pamphlets.

PACKARD, A. S., of Brunswick, Maine. Miscellaneous college pamphlets, 4.

PALFRAY, C. W. Miscellaneous pamphlets, 20.

STAPLES, C. E., of Worcester, Mass. Programme of the Sixteenth Annual Festival of the Worcester County Musical Association, Oct. 6, 7, 8, 9, 10, 1873.

STEPHENS, W. H., of Lowville, N. Y. Autobiography of L. Norton. 1 vol. 12mo.

STONE, E. M., of Providence, R. I. Annual Report of the School Committee of the City of Providence, July, 1873. 8vo pamph.

SUMNER, CHARLES, U. S. Senate. Medical and Surgical History of the War of the Rebellion. 2 vols. 4to.

UPHAM ROGER F. Annual Report of the Young Men's Christian Association of Worcester, 1873.

U. S. BUREAU OF EDUCATION. Report of the Commissioners of Education, 1872. 1 vol. 8vo. Circulars of Information of the Bureau. Nos. 1, 2, 3, 1873.

U. S. DEPARTMENT OF THE INTERIOR. Meteorological Observations during the year 1872 in Utah, Idaho and Montana, by H. Gannett.

U. S. PATENT OFFICE. Official Gazette for Aug. 19, 26, Sept. 2, 9, 16, 23, 1873.

By Exchange.

AKKLIMATISATIONS VEREIN IN BERLIN. Zeitschrift, Vol. ix, Nos. 7–12, 1871. Vol. x, Nos. 1–12, 1872.

AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the, at the Semi-Annual Meeting, held in Boston, Apr. 30, 1873.

BERWICKSHIRE NATURALIST CLUB. Proceedings of, 1872.

BOSTON PUBLIC LIBRARY. Twenty-First Annual Report, 1873.

CROSSE ET FISCHER. Journ. Conchyliologie, Tome xiii. 3e Série. Nos. 2, 3, 1873.

GEINITZ, HANNS BRUNO. Königliche Mineralogische Museum zu Dresden. 1873.

INSTITUT HISTORIQUE IN PARIS. L' Investigateur, Jan., Feb., March, April, 1873. 2 pamphlets. 8vo.

KONGELIGE DANSKE VIDENSKABERNES SELSKAB IN KJÖBENHAVN. Oversigt, 1872. No. ii.

L' ACADÉMIE IMPÉRIALE DES SCIENCES, in St. Petersburg. Memoires, Tome xviii, Nos. 8, 9, 10, 1872. Tome xix, Nos. 1, 2, 1872. 5 pamphlets. Bulletin, Tome xvii, Nos. 4, 5, 1872. Tome xviii, Nos. 1–2, 1872. 3 pamphlets.

NATURHISTORISCHE GESELLSCHAFT ZU HANNOVER. Zweiundzwanzigster Jahresbericht, 1871, 1872.

NATURWISSENSCHAFTLICHEN GESELLSCHAFT "ISIS" IN DRESDEN. Sitzungs-Berichte. Oct., Nov., Dec., 1872. Jan., Feb., März, 1873.

NATURWISSENSCHAFTLICHEN VEREIN IN HAMBURG. Uebersicht der Aemter-Vertheilung und Wissenschaftlichen Thätigkeit, 1871. Abhandlungen aus dem Gebiete der Naturwissenchaften. V Bd. 3 Abth. mit 8 Tafeln, 1872.

Rufus B. Gifford, of Salem, Mrs. Mary Safford Blake, of Boston, Charles A. Torrey, of Swampscott, and Frank O. Poor of Peabody, were duly elected resident members.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 5. Salem, Mass., Nov., 1873. No. 11.

One Dollar a Year in Advance. 10 Cents a Single Copy.

Regular Meeting, Monday, Nov. 3, 1873.

Meeting this evening at 7.30 o'clock. The President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence :—

From Frances A. A. Appleton, Reading, Sept. 26, 1873; S. L. Boardman, Augusta, Me., Oct. 22; E. P. Boow, New York, Nov. 1; C. J. Maynard, Ipswich, Oct. 29; Thomas Morong, Ipswich, Oct. 27; William Northey, Oct. 29; J. H. Putnam, Danvers, Oct. 27; William S. Vaux, Philadelphia, Oct. 31; John A. Vinton, Winchester, Oct. 23, 30; Charles A. Walker, Chelsea, Nov. 1; William C. Wood, Wenham, Oct. 18; H. T. Williams, New York, Oct. 23; Vermont State Library, Oct. 30; U. S. Naval Observatory, Washington, Oct. 26; Bruxelles, Académie Royale, Mai 10; Calcutta, Geological Survey of India, Sept. 3, 1872; Lyon, Société d' Agriculture, Histoire Naturelle et Arts Utiles. Juillet; Historical and Philosophical Society of Ohio, Oct. 23.

The Librarian reported the following additions :—

By Donation.

Andrews, Miss Eliza. North British Review, 1856. 14 nos.

Bolles, E. C. Boston, As it was and is. 1 vol. 8vo. 1872.

Bowditch, Henry I., of Boston. Nation, 1865, 1866, 1867, 1868. 7 vols. 4to, and 236 numbers of subsequent years. Army and Navy Journal for 1863-4, 1864-5, 1865-6. 3 vols. 4to.

Crosby, A. Triennial Catalogue of Dartmouth College, 1873. 8vo pamph.

Lee, John C. Commercial Bulletin for Sept. 27, Oct. 4, 11, 18, 1873.

Lincoln, Solomon, Hingham. The Old Meeting House in Hingham, 1681-1873. 8vo pamph.

Nichols. John H., of New York, N. Y. Miscellaneous pamphlets, 50.

Putnam, Geo. G. Salem Directory for 1864. 1 vol. 16mo. The Rural Cemeteries of America, pts. 3, 4. 2 pamphlets, 4to. 1846.

Raymond, John H., of Poughkeepsie, N. Y. Catalogues of Vassar College for 1865-6, 1866-7, 1867-8, 1869-70, 1871-2, 1872-3. Communications to the Board of Trustees of Vassar College, by its Founder. 8vo pamph. Biographical Sketch of Matthew Vassar, by J. H. Raymond. 8vo pamph. A Sketch of Vassar College, by J. H. Raymond. May, 1873. 8vo pamph.

Saunders, Mary. History of the town of Warwick, Mass., by Hon. Jona. Blake. 1 vol. 8vo. 1873.

Webb, S. P. Wood's Institute. 1 vol. 4to. London, 1763. Elementary Treatise on Mechanics. 1 vol. Cambridge, 1825. Wealth of Nations. 2 vols. 8vo. Hartford, 1811. Patent Office Report for 1848. 1 vol. 8vo. Stewart on the Mind. 1 vol. 8vo. Boston, 1821. The Federalist. 1 vol. 8vo. Washington, 1818. Laws of Mass. Vol. ii, iii. 2 vols. Boston, 1823. Holy Bible. 3 vols. 8vo. Phila., 1804. Sermons by Rev. J. S. Buckminster. 1 vol. 8vo. Boston, 1814. Memoir of Nath'l A. Haven. 1 vol. 8vo. 1827. Element of Physics. 1 vol. 8vo. Phila., 1829. Adverse Enjoyment. 1 vol. 8vo. Boston, 1827. Lectures on Rhetoric and Belles Lettres. 1 vol. 8vo. N. Y., 1826. Memoirs of Gen. Lafayette. 1 vol. 8vo. Boston, 1824. The Power of Solitude. 1 vol. 8vo. Bards of the Bible. 1 vol. 8vo. New York, 1851. Discourses by F. Wayland. 1 vol. 8vo. Boston, 1833. Poems by G. Mellen. 1 vol. 8vo. Boston, 1833. Philosophy of Religion. 1 vol. 8vo. Phila., 1849. Sullivan's Lectures. 2 vols. 8vo. Portland, 1805. The Scriptures on the Guilt of Slavery. 1 vol. 8vo. Boston, 1860. Elements of Technology. 1 vol. 8vo. Boston, 1829. Essays on Phrenology. 1 vol. 8vo. Phila., 1822. Universal History. Vols. i, ii, iv. 3 vols. 12mo. Collections of the Mass. Historical Society for 1799. 1 vol. 8vo. Boston, 1800. The Throne of David. 1 vol. 8vo. Phila., 1860. Memoirs of the Revolution. 1 vol. 8vo. Phila., 1839. Spurzheim on Education. 1 vol. 8vo. Boston, 1832. Jefferson's Manual. 1 vol. 12mo. History of Nova Scotia, etc. 1 vol. 12mo. 1837. Washington's Letters. 2 vols. New York, 1796. Unitarian Tracts. 3 vols. 12mo. Legend of St. George. 16mo. 1836. The Works of Alexander Pope. 1 vol. 16mo. London, 1736. Notes on the State of Virginia. 1 vol. 16mo. Boston, 1802. Hymns and Psalms. 1 vol. 16mo. Boston, 1828. The Life and Death of the Rev. A. Fuller. 1 vol. 12mo. 1818. Channing on Slavery. 1 vol. 12mo. Miscellaneous Works of Oliver Goldsmith. 1 vol. 16mo. Phila., 1827.

By Exchange.

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The following donations were announced to the Museum:—

George G. Creamer. A sea-letter with the signatures of Geo. Washington and Edw. Randolph.

George D. Phippen. A Memorial Pitcher.

Mrs. P. P. Pinel. A Miniature of Capt. Eben Shillaber.

Mrs. Edward Appleton of Reading. A piece of the first Patch or India Copper Plate, as it was called, that was imported into Boston by Hon. Thaddeus Mason, of Cambridge (b. Jan. 7, 1707, and d. May 1, 1802), probably more than 130 years old.

Mr. C. J. MAYNARD, of Ipswich, gave an interesting sketch of the mechanism of the flight of birds, which he illustrated by a series of preparations of the breast bones, and by drawings on the blackboard. He also alluded to the means by which animals belonging to other classes are enabled to fly with a greater or less degree of perfection; such as the bats, flying fishes, flying reptiles, etc.

A discussion on some points of structure followed, participated in by Messrs. F. W. Putnam, A. S. Packard, Jr., and others.

Mr. F. W. PUTNAM read the following communication:

NOTES ON THE BIRD-FAUNA OF THE SALT LAKE VALLEY AND THE ADJACENT PORTIONS OF THE WAHSATCH MOUNTAINS.

BY ROBERT RIDGWAY.

THE recently published paper of Mr. J. A. Allen[*] upon the birds collected and observed by him in the vicinity of Ogden, in the Salt Lake Valley, has called the attention of ornithologists to that field; and has, moreover, particularly attracted those interested in the subject of the geographical distribution of North American birds.

While Mr. Allen's observations were made during the season of the autumnal migration, I had the good fortune to explore nearly the same ground during the breeding season,[†] or when the summer fauna was stationary. Combining, therefore, the results of the two explorations, and taking into additional consideration that we collected in localities a few miles apart — Mr. Allen at Ogden and I at and about Salt Lake City — the character of the avi-fauna of the western watershed of the Wahsatch may be pretty well shown.

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[*] See Bulletin of the Museum of Comparative Zoology, Cambridge, Mass., Vol. iii, No. 6, July, 1872. Part viii, List of the Birds collected in the Vicinity of Ogden, Utah Territory, from Sept. 1 to Oct. 8, 1871; with Annotations. pp. 164–173. (Species 137.)

[†] It is fitting to state here that my investigations were made under the auspices of the government, I being attached to the U. S. Geological Survey of the 40th parallel, as zoologist. Mr. Clarence King, U. S. Geologist in charge of the Survey, throughout the continuance of the work, offered me every possible facility. The general report upon the birds collected and observed by Mr. King's Survey is now in press and nearly completed, and will ere long be before the public.

The season of my investigations extended from the 20th of May until the middle of August, 1869. The area which they covered comprised the immediate vicinity of Salt Lake City, where most of the month of May was passed, and where a few birds were collected by me the previous October. In the early part of June a trip was taken to the large islands, Antelope, Stansbury and Carrington, in the Great Salt Lake. On the 23d of the latter month our camp was removed to Parley's Park, an elevated meadow in the Wahsatch mountains, about twenty-five miles east of Salt Lake City. In Parley's Park a rich bird-fauna was found, and I had the good fortune to be there in the height of the breeding season. About the beginning of July, an excursion was made to the western spur of the Uintah Mountains, crossing Kamas Prairie on the way. Returning along the Provo River, passing by Utah Lake, and thence northward along the western base of the Wahsatch, to Salt Lake City, the field of my observations was still farther extended.

Throughout this considerable area of country no marked local variations in the bird-fauna were noticed, beyond occasionally the occurrence at a certain point of a species not noticed elsewhere. Thus, on Antelope Island, the true *Empidonax Traillii* was obtained. In Kamas Prairie, *Actiturus Bartramius* was noticed, while along the Provo River, *Turdus fuscescens* was very abundant. In Parley's Park, a single individual of *Calamospiza bicolor* was seen and obtained, and at Salt Lake City the *Melanerpes erythrocephalus* was seen. Of course the necessary diversity of woodland, desert and aquatic faunæ was everywhere observed in their respective haunts, but the same kind of locality was inhabited by the same characteristic set of birds, wherever we went.

The western water-shed of the Wahsatch Mountains is a region remarkable as forming a natural, and nearly abrupt, limit to the westward range of the bulk of the species characterizing the eastern region of North America, though the western fauna overlaps for a distance of nearly one thousand miles to the eastward. In the *Ornis* of the Salt Lake Valley there is thus a combination of these two opposite faunæ, which gives to it an interesting variety and peculiar richness, compared with other western localities. This mixture of eastern and western birds at first rather surprises the collector in this section, for it is so far within the area of the western region that the former are supposed to be all left behind. Taking the vicinity of Salt Lake City, the collector will find, in the lower portions of the cañons of the Wahsatch, the Cat-bird (*Galeoscoptes Carolinensis*), skulking through the same thickets with the Woodhouse's Jay (*Cyanocitta Floridana*, var. *Woodhousei*), while the Olive-backed Thrush (*Turdus Swainsonii*) joins in song with the Solitaire (*Myiadestes Town-*

sendii). In the willow copses along the streams of the valley portions, the Tawny Thrush (*Turdus fuscescens*) sings in company with the Western Tanager (*Pyranga Ludoviciana*) and Black-headed Grosbeak (*Hedymeles melanocephalus*); the Redstart (*Setophaga ruticilla*) and Fairy Titmouse (*Psaltriparus plumbeus*) may often be seen flitting through the same thickets; in the meadows, Bobolinks (*Dolichonyx oryzivorus*) and Yellow-headed Blackbirds (*Xanthocephalus icterocephalus*) mingle together; in the same cottonwood trees may be found nests of the Eastern and Western Kingbirds (*Tyrannus Carolinensis* and *T. verticalis*), while around them sport together the eastern Red-headed Woodpecker (*Melanerpes erythrocephalus*) and its ring-necked cousin (*M. torquatus*). Besides those above mentioned, are many other eastern species whose ranges find their western limit in this neighborhood. Mr. Allen gives the following as found at Ogden: — *Dendroica Blackburniæ* (Sept.): *Vireosylvia olivacea* (Sept.). Other eastern species, given in Mr. Allen's list, I have obtained at various points in Nevada, as follows:—*Helminthophaga ruficapilla* (East Humboldt Mts., Sept.; also California, Xantus and Gruber); *Lanivireo solitaria* (West and East Humboldt Mts., Sept. and Oct.); *Ampelis cedrorum* (Humboldt Valley, Sept.): *Dolichonyx oryzivorus* (Ruby Valley, August); *Tyrannus Carolinensis* (Truckee River, July and August); also *Spizella monticola* (western Nevada; winter resident) and *Ectopistes migratoria* (West Humboldt Mts., Sept.), not given in Mr. Allen's list. Besides the foregoing species, Mr. C. Drexler obtained at Fort Bridger, near the northeastern corner of Utah, and still within the Wahsatch region, the following additional species:— *Seiurus Noveboracensis*, *Empidonax minimus*, and *Quiscalus purpureus* var. *aeneus*. These will undoubtedly yet be found in the Salt Lake Valley.

In addition to these species, Mr. H. W. Henshaw, of Lieut. Wheeler's expedition, procured the *Melospiza palustris* in southern Utah, and obtained good evidence of the breeding of *Cistothorus stellaris* in Utah Lake.

Another very remarkable peculiarity of the Wahsatch region, which I wish particularly to mention in this connection, is the fact that, in the case of representative species or races, the eastern or Rocky Mountain forms breed there, while the more western forms replace them in the fall and winter. Thus *Zonotrichia leucophrys* and *Junco hyemalis* var. *caniceps* are the only species of these two genera which breed on the Wahsatch, and they nest there very numerously; but in the fall their place is taken by the western *Z. leucophrys* var. *Gambelii* and *J. hyemalis* var. *Oregonus*, which are unknown in summer. *Lanivireo solitaria* var. *plumbea* breeds there, while var. *solitaria*, coming from the northwestward, replaces it in autumn. The same is the case with *Turdus Pallasii* var. *Auduboni* (summer resident) and var. *nanus* (autumnal migrant); and apparently the case also, with *Helminthophaga Virginiæ* (summer) and *H. ruficapilla* (autumn).

I shall notice first the results of Mr. Allen's investigations, as embodied in the list above cited; and as I desire to add some notes on species whose range, etc., Mr. Allen had no chance to determine, I shall go through the catalogue in regular order. (The numbers prefixed to the species correspond to those in Mr. Allen's catalogue.)

P. 165. No. 2. = *T. Pallasii* var. *Auduboni*.

P. 166. No. 10. *Cistothorus stellaris* is a misprint for C. (= *Telmatodytes*) *palustris* var. (*paludicola*).

No. 5. (*Sialia arctica*.) I found this species breeding in Salt Lake City, on Antelope Island, in the lake, and on the Wahsatch Mountains, in June.

No. 7. (*Regulus calendula*.) Found in the pine woods of Parley's Park (altitude 8.000 feet) in June, July and August, and no doubt breeds there.

No. 16. (*Helminthophaga celata*.) Found by me breeding in the aspen woods at an altitude of 7,000-9.000 feet, in the Wahsatch.

No. 17. (*Dendroica Auduboni*.) Breeding in the pine woods of the Wahsatch, at an altitude of 7,000-9,000 feet.

No. 19. ("*D. nigrescens?*.") This was very probably that species, as I found it breeding in tolerable abundance on the East Humboldt Mts. Mr. Aiken has also found it on the mountains of Colorado.

P. 167. No. 23. (*Setophaga ruticilla*.) I found this species to be common in the Salt Lake region, both in the valley portions and in the lower portions of the cañons. Obtained in June on Antelope Island.

No. 31. = *C. Ludovicianus* var. *excubitoroides*.

No. 34. Should be *C. Cassinii*.

No. 38. Should be var. *alaudinus*.

No. 39. Should be var. *confinis*.

No. 41. We found the true *leucophrys* breeding abundantly in Parley's Park, and high up in City Creek Cañon, and, from May till the latter part of August, never saw a single specimen of *Z. Gambelii*.

P. 168. No. 45. Should be *S. pallida* var. *Breweri*.

No. 46. Should be var. *fallax*.

No. 51. Should be var. *megalonyx*.

No. 63. According to the strict rules of binomial nomenclature, the name "*Aphelocoma*" (Cabanis) cannot be used for this genus, the proper name of which is *Cyanocitta* (Strickland) of prior date, and strictly congeneric type (*C. Californica*).

No. 72. Should be var. *Henryi*.

No. 74. No doubt var. *Gairdneri*, which species I found in July and August in Parley's Park.

P. 170. No. 82. Should be var. *calurus*.

P. 171. No. 92. Should be var. *umbelloides*.

No. 103. Eggs obtained in Uintah Mts. in July. Very common in Wahsatch during summer.

No. 104. Not seen by us in June on Antelope or Stansbury Islands, but observed in the ponds on the southeast shore of the lake.

P. 172. No. 108. This is the *I. guarauna*, a south and middle American species common in the middle provinces of the United States (where *I.* "*Ordii*" does not occur). It is specifically distinct from "*Ordii*" which is absolutely identical with the *I. falcinellus* of Europe.

No. 109. *Ibis alba*. This locality is entirely new for this bird, it having not been previously obtained within the middle province of the United States.

No. 114. Should be *R. elegans*.

P. 173. No. 135. Another species new to the fauna of the Great Basin.

The following species, not given in Mr. Allen's list of autumnal birds in the vicinity of Ogden, were found by me breeding in Salt Lake City and the neighborhood:

No.	*Species.*	*Where found.*	*Alt.*	*Numbers.*
1.	Turdus fuscescens.	Willows of river valleys.	4.000–6.000	Abundant.
2.	Turdus Swainsoni.	Mountain streams.	6.000–9,000	"
3.	Catherpes Mexicanus, *var.* conspersus.	City Creek Cañon near Salt Lake City.	4,000–5.000	Rare.
4.	Certhia Americana.	Pine region of Wahsatch	8,000–10.000	Not common.
5.	Sitta Canadensis.	" " " "	8.000–10.000	Rare.
6.	Parus montanus.	" " " "	8.000–10.000	Common.
7.	Helminthophaga Virginiæ.	Scrub oaks of foot-hills, and mahogany woods.	4.000–6,000	"
8.	Dendroica æstiva.	Everywhere.	4.000–10.000	Abundant.
9.	Cotyle riparia.	Valley portions.	4,000	"
10.	Progne subis.	Aspen woods.	7.000–9.000	"
11.	Lanivireo solitaria, *var.* plumbea.	"Mahogany" and cedar woods.	7.000–10.000	Rare.
12.	Carpodacus Cassinii.	Cottonwoods in parks.	6.000–8,000	Abundant.
13.	Carpodacus frontalis.	Valleys.	4,000–6.000	"
14.	Chrysomitris pinus.	Pine region and aspens.	8.000–10.000	Extremely abundant.
15.	Chondestes grammaca.	Valleys-artemisia.	4,000–5.000	Very abundant.
16.	Zonotrichia leucophrys.	Parks.	6.000–8.000	Abundant.
17.	Junco hyemalis, *var.* caniceps.	Pine region.	8.000–10.000	Common.
18.	Poospiza bilineata.	Artemisia plains.	4,000–5.000	Abundant.
19.	Spizella pallida, *var.* Breweri.	" "	4.000–5,000	"
20.	Calamospiza bicolor.	Parley's Park.	7,000	1 spec.
21.	Pipilo erythrophthalmus, *var.* megalonyx.	Scrub oaks of foot-hills.	4.000–6.000	Very abundant.
22.	Myiarchus crinitus, *var.* cinerascens.	Parley's Park.	7,000	Rare.
23.	Sayornis Sayus.	Valleys.	4,000–5,000	Rath. com.
24.	Empidonax Traillii.	Antelope Island.	4.000 ?	1 spec.

No.	*Species.*	*Where found.*	*Alt.*	*Numbers.*
25.	E. TRAILLII, *var.* PUSILLUS.	Willows along streams.	4,000-7,000	Very abundant.
26.	MOLOTHRUS PECORIS.	Valleys.	4,000	Not common.
27.	PICUS PUBESCENS, *var.* GAIRDNERI.	Parks.	8,000	Very rare.
28.	PICUS VILLOSUS, *var.* HARRISII.	All wooded portions.	4,000-10,000	Common.
29.	SPHYROPICUS VARIUS, *var.* NUCHALIS.	Aspen woods.	7,000-9,000	Very abundant.
30.	SPHYROPICUS THYROIDEUS.	Pine region.	8,000-10,000	Rare.
31.	SPHYROPICUS WILLIAMSONII.	" "	8,000-10,000	"
32.	MELANERPES ERYTHROCEPHALUS.	Salt Lake City.	4,000	1 spec.
33.	MELANERPES TORQUATUS.	Cottonwoods of river valleys.	4,000 ?	Not common.
34.	TROCHILUS ALEXANDRI.	Flowery places everywhere.	4,000-8,000	Common.
35.	PANYPTILA MELANOLEUCA.	City Creek Cañon.	5,000 ?	Rare.
36.	BUTEO SWAINSONII.	Everywhere.	4,000-9,000	Very common.
37.	FALCO LANARIUS, *var.* POLYAGRUS.	Cliffs of cañons; valleys.	4,000-9,000	Rare.
38.	SYMPHEMIA SEMIPALMATA.	Marshes.	4,000-7,000	Very common.
39.	NUMENIUS LONGIROSTRIS.	Marshes of lake shores.	4,000	Abundant.
40.	ÆGIALITIS CANTIANUS, *var.* NIVOSUS.	Shore of Warm Spring Lake.	4,000	Very abundant.
41.	PORZANA JAMAICENSIS ?	Parley's Park, meadows.	7,000	Not rare!
42.	LARUS ARGENTATUS, *var.* CALIFORNICUS.	Salt Lake.	4,000	Very abundant.
43.	STERNA REGIA.	" "	4,000	"
44.	STERNA FORSTERI.	" "	4,000	"

Mr. Allen obtained the following species in October, which I did not find among the summer birds. Those marked * are probably resident and breeding; the others are autumnal migrants from the northern and northwestern regions :—

1. Anthus Ludovicianus.
2. Helminthophaga ruficapilla.
3. Dendrœca Blackburniæ.
*4. " nigrescens.
*5. Vireosylvia olivacea.
6. " solitaria.
*7. Ampelis cedrorum.
8. Zonotrichia leucophrys, *var.* Gambelii.
9. Junco hyemalis, *var.* Oregonus.
*10. Corvus Americanus.
11. Macrorhamphus griseus.
12. Pelidna alpina, *var.* Americana.
13. Gambetta melanoleuca.
14. " flavipes.
*15. Ibis alba.
16. Rallus elegans (" crepitans").
17. Anser hyperboreus.
18. Chroicocephalus Philadelphia.
19. Xema Sabinii.
20. Podiceps cornutus.

Mr. F. W. PUTNAM also read the following communication :—

THE BIRDS OF COLORADO.—BY ROBERT RIDGWAY.

THE present paper is based upon the observations of Mr. Charles E. Aiken, made in El Paso county, Colorado, chiefly in the vicinity of Fountain.[*] The results of this gentleman's explorations in that field were communicated, from time to time, to Professor Baird, Dr. Brewer and myself, for use in our forthcoming work on North American Birds; but they are of such great interest that we cannot refrain from giving the public the benefit of them sooner than their appearance in our work.

In a paper on the birds collected by Mr. C. H. Holden, Jr., in the southern part of Wyoming,[†] Dr. Brewer has incorporated some notes furnished by Mr. Aiken upon the birds observed by him in the contiguous portions of northern Colorado; but Mr. Aiken having since sent to me a list of all the birds obtained and observed by him within the limits of the latter Territory, I have availed myself of his list as a nucleus for preparing a catalogue of all the species known to have been found within its limits. A few additions to Mr. Aiken's list have been made from Mr. Allen's "Ornithological Reconnoissance[‡]" of portions of Colorado, and from the collections made by the Government exploring parties under the direction of Dr. F. V. Hayden, U. S. Geologist, each species so included having the fact properly noted.

Mr. Aiken's researches were attended by many very important results. A new snowbird (*Junco hyemalis*, var. *Aikeni* RIDGWAY, Am. Nat., vol. vii, No. 10, Oct., 1873, p. 615), with two white bands on the wing, and of much larger size than the common form, was found among the high peaks and valleys of El Paso county; and two specimens of *Centronyx Bairdii* were taken in the same locality, being the second and third examples that were then known. These specimens, one procured in the fall and the other in the spring, are in different plumages from the type, which is a midsummer bird, thereby attesting the entire distinctness and perfect dissimilarity of this species from any other yet known. But important and creditable as these two discoveries are, the new facts in regard to the geographical distribution of certain species, brought to light by Mr. Aiken's investigations, are of even greater value.

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[*] See American Naturalist, vii, No. 1, p. 13. "A Glimpse at Colorado and its Birds. By C. E. Aiken."

[†] Notes on the Birds of Wyoming and Colorado Territories. By C. H. Holden, Jr; with additional memoranda by C. E. Aiken. (Edited by T. M. Brewer, M.D.) Proceedings of the Boston Soc. of Nat. Hist., vol. xv, pp. 193–210: Dec., 1872. (142 species.)

[‡] Notes of an Ornithological Reconnoissance of portions of Kansas, Colorado, Wyoming and Utah. By J. A. Allen. Bulletin of the Museum of Comparative Zoology, Cambridge, Mass., vol. iii, No. 6. Part iii. List of Birds observed at the eastern base of the Rocky Mountains in Colorado Territory, between Colorado City and Denver, in July and August, 1871; with annotations, pp. 147–153. (81 species.) Part vi. List of Birds observed in South Park, Park County, Colorado Territory, in July, 1871; with annotations, pp. 153–159. (54 species.) Part vii. List of Birds observed in the Vicinity of Mt. Lincoln, Park County, Colorado, from July 19 to July 26, 1871; with annotations, pp. 159–164. (36 species)

These facts are, first, the much greater northeastward range of forms heretofore supposed to be confined to the Colorado Province, in Arizona; second, the occurrence in the mountains of Colorado of many species found upon the Sierra Nevada, which seem to be entirely wanting in the intermediate widely spread area of the Great Basin; and, third, the occurrence in the mountains of Colorado of many strictly eastern species, not previously traced beyond the eastern border of the Plains. The latter result of Mr. Aiken's collecting in Colorado, joined to that of Mr. Allen in the same Territory and that of the writer, and subsequently Mr. Allen and other ornithologists in Utah, establishes the Rocky Mountain Range as the dividing line, or, more properly, the meeting ground, of the avi-faunæ of the Eastern and Western Regions, this system being, throughout its whole extent, almost as nearly related to the one as to the other,—though, as would be expected from the physical conditions of the country, the western element preponderates. Besides these discoveries in the geographical distribution of the species, new facts in relation to the range, habits or other peculiarities, of certain species are among other of the very satisfactory results of Mr. Aiken's ornithological explorations in Colorado. As a particular example, I may mention the discovery of the fact that *Corvus cryptoleucus*, formerly supposed to be confined to the Llano Estacado of Texas, is a very common bird along the eastern base of the Rocky Mountains, as far north as Cheyenne!

Upon examining a map of Colorado, it will be seen that the topography of this Territory is peculiarly favorable to an extremely varied fauna. The water-shed of the Continent runs across it almost in the middle, the streams on the eastern slope flowing into the Gulf of Mexico through the western tributaries of the Mississippi River, and those of the western slope emptying into the gulf of California, through the northeastern tributaries of the Rio Colorado. The direct result of its central position between several drainage systems is that the general eastern and western faunæ meet, or overlap; the birds characteristic of the Rio Grande district also enter its limits by following the head waters of that stream northward into San Louis Park and the adjacent country, while those of the Arizona district follow the northeastern tributaries of the Colorado River, and diffuse themselves over the western portion. In the northwestern corner there is also a slight impress of the desert fauna of the Middle Province in consequence of the arid nature of the Green River district, while along the eastern base of the mountains the peculiar fauna of the Plains is the prevailing one upon the grassy foot-hills and prairies.

The following tables will show more clearly the distinct geographical elements in the Colorado avi-fauna. The species with an asterisk (*) prefixed were first found in Colorado by Mr. Aiken.

I. EASTERN SPECIES FOUND IN COLORADO.

		Supposed Western Limit.
1.	**Turdus fuscescens.**	Salt Lake Valley; breeding; common. Ridgway.
2.	**Turdus Swainsoni.**	E. Humboldt Mts., Nevada; Sept. Ridgway.
3.	**Galeoscoptes Carolinensis.**	Islands of Salt Lake; breeding. Ridgway.
4.	**Harporhynchus rufus.**	Eastern base of Rocky Mountains. Gov't Survey.
*5.	**Sialia sialis.**	El Paso Co., Col. Aiken.
*6.	**Helminthophaga peregrina.**	El Paso Co., Col. Aiken.
*7.	**Parula Americana.**	El Paso Co., Col., May 11. Aiken.
8.	**Dendroica coronata.**	Denver, Col. Wernigk. El Paso Co. Aiken.
9.	**Setophaga ruticilla.**	Islands of Salt Lake; breeding. Ridgway.
*10.	**Passerculus savanna.**	El Paso Co., Col. Aiken.
11.	**Zonotrichia leucophrys.**	Wahsatch Mts.; W. slope; breeding. Ridgway.
12.	**Junco hyemalis.**	Arizona. Coues. Utah. Henshaw. Colorado. Aiken.
13.	**Spizella monticola.**	Col. R. Kennerly. W. Na.; com. win. res. Ridgway.
14.	**Euspiza Americana.**	Denver. Allen.
*15.	**Cyanospiza cyanea.**	El Paso Co., Col. Aiken.
16.	**Dolichonyx oryzivorus.**	Ruby Valley, Nevada, Aug. and Sept. Ridgway.
*17.	**Icterus Baltimore.**	El Paso Co., Col. Aiken.
18.	**Icterus spurius.**	Denver, Colorado. Allen.
19.	**Quiscalus æneus.**	Fort Bridger, Wyoming. Drexler. Col. Aiken.

		Supposed Western Limit.
20.	**Tyrannus Carolinensis.**	W. Na; breeding; S. L. Val.; breeding. Ridgway.
21.	**Empidonax Traillii.**	Antelope Island, Salt Lake; June, 1869. Ridgway.
22.	**Empidonax minimus.**	Fort Bridger, Wyoming. Drexler. Col. Aiken.
*23.	**Sphyropicus varius.**	Colorado. Aiken.
*24.	**Centurus Carolinus.**	Colorado. Aiken.
25.	**Melanerpes erythrocephalus.**	Salt Lake City; June. Ridgway.
26.	**Nisus Cooperi.**	Doubtful.
*27.	**Grus Americanus.**	Colorado. Aiken.
28.	**Actiturus Bartramius.**	Kamas Prairie, Utah; July; breeding. Ridgway.
*29.	**Anas obscura.**	Colorado. Aiken.
30.	**Querquedula discors.**	W. Nevada; rare; breeding? Ridgway.

II. OTHER EASTERN SPECIES FOUND AT MORE WESTERN POINTS, NOT YET DETECTED IN COLORADO.

1.	**Cistothorus stellaris.**	Utah Lake; breeding. Henshaw.
2.	**Helminthophaga ruficapilla.**	California. Xantus and Gruber. Ogden, Utah, Sept. Allen. E. Humboldt Mts., Na.; Sept. Ridgway.
3.	**Dendroica Blackburniæ.**	Ogden, Utah; Sept. Allen.
4.	**Seiurus Noveboracensis.**	Fort Bridger, Wyoming. Drexler.
5.	**Lanivireo solitaria.**	W. and E. Humboldt Mts., Nevada; Sept. Ridgway. S. L. Val.; Sept. Allen.
6.	**Vireosylvia olivacea.**	Fort Bridger, Wyoming. Drexler. Salt Lake Val.; Sept. Allen.
7?	**Plectrophanes Lapponicus.**	W. Nevada; winter. Ridgway.
8.	**Melospiza palustris.**	Southern Utah; Oct. Henshaw.
9.	**Passerella iliaca.**	Saticoy, Cal.; Nov. Dr. Cooper.
10.	**Corvus Americanus.**	W. Nevada; Oct. and Nov. Ridgway.

11. **Coccygus Americanus.**	Sac., Cal., June; RIDGWAY. W. Nevada, July and Aug. RIDGWAY. Tucson, Ariz.; breeding. BENDIRE. Fort Burgwyn, New Mex. DR. ANDERSON.
12? **Coccygus erythrophthalmus.**	N. Cal. DR. NEWBERRY.
13. **Hylotomus pileatus.**	Columbia River. TOWNSEND.
14. **Colaptes auratus.**	California. COOPER.
15. **Ectopistes migratoria.**	W. Humboldt Mts., Nevada; Sept. RIDGWAY.

III. SPECIES OF THE SOUTHERN BORDER OF THE U. S., WHICH HAVE BEEN FOUND IN COLORADO, BUT WHICH PROBABLY DO NOT OCCUR IN THE GREAT BASIN AT CORRESPONDING LATITUDES.

a. Found from Florida to California.

*1. **Mimus polyglottus.** (Colorado bird is var. *caudatus* Baird.)
*2. **Polioptila cærulea.**
*3. **Guiraca cærulea.**
*4. **Cardinalis Virginianus.** (var. *igneus* Baird.)

b. From Florida to the Rocky Mountains.

*5. **Meleagris gallopavo.** (var. *Mexicana* Gould.)
6. **Demiegretta** ——— sp. ?

c. From the Rio Grande to California.

7. **Tyrannus vociferans.**
*8. **Geococcyx Californianus.**
*9. **Pipilo fusca.** (var. *mesoleuca* Baird.)

d. Eastern base of Rocky Mountains, only.

*10. **Corvus cryptoleucus.**

IV. WESTERN SPECIES FOUND IN COLORADO, WHICH APPARENTLY DO NOT OCCUR IN CORRESPONDING LATITUDES IN THE GREAT BASIN.

*1. **Sialia Mexicana.** (Found in western Iowa by Mr. Atkinson!)
*2. **Lophophanes inornatus.**
3. **Sitta aculeata.**
4. **Sitta pygmæa.**
*5. **Glaucidium Californicum.**

CATALOGUE OF THE BIRDS KNOWN TO OCCUR IN COLORADO; DISTINGUISHING (WITH AN ASTERISK) THOSE WHICH HAVE BEEN ASCERTAINED TO BREED WITHIN THE LIMITS OF THE TERRITORY, AND APPROXIMATELY INDICATING THEIR RANGE DURING THE BREEDING SEASON.

No birds are included in the following list which are not positively known to occur within the limits of Colorado, nor are any of those marked as breeding in the Territory so distinguished without as good reason. Many species not found by Messrs. Aiken and Allen have been obtained by one or more of the several Government expeditions, chiefly those in charge of Dr. F. V. Hayden, which have from time to time made portions of Colorado their field of exploration.

No.	*Species.*	*Centre of abundance during breeding season.*
*1.	**Turdus fuscescens** STEPHENS.	Along the lower streams.
*2.	**Turdus Swainsoni** CABANIS.	" " mountain "
*3.	**Turdus Pallasii** CABAN., *var.* AUDUBONI Baird.	Pine region.
*4.	**Turdus migratorius** L.	All wooded portions.
*5.	**Galeoscoptes Carolinensis** (L.).	Along streams.
*6.	**Oreoscoptes montanus** (TOWNS.).	Artemisia plains.
*7.	**Harporhynchus rufus** (L.), *var.* LONGICAUDA Baird.	Foot-hills.
*8.	**Mimus polyglottus,** *var.* CAUDATUS Baird.	
*9.	**Cinclus Mexicanus** SWAINS.	Mt. streams and torrents.
10.	**Sialia sialis** (L.).	
*11.	**Sialia Mexicana** SWAINS.	Foot-hills.
*12.	**Sialia arctica** SWAINS.	Bare portions of mountains, near tree-limit; occasionally breeds lower down.
*13.	**Regulus calendula** (L.).	Pine region.
14.	**Regulus satrapa** LICHT.	
15.	**Polioptila cærulea** (L.).	
*16.	**Lophophanes inornatus** (GAMB.).	Foot-hills?
*17.	**Parus montanus** GAMB.	Pine region.
*18.	**Parus atricapillus** L., *var.* SEPTENTRIONALIS Harris.	Streams of lower portions.

No.	*Species.*	*Centre of abundance during breeding season.*
*19.	**Psaltriparus minimus** (Towns.), *var.* PLUMBEUS Baird.	Cañon streams.
*20.	**Sitta Carolinensis** Lath., *var.* ACULEATA Cass.	Pine region.
*21.	**Sitta pusilla** Lath., *var.* PYGMÆA Vig.	" "
*22.	**Certhia familiaris** L., *var.* AMERICANA Bonap.	" "
*23.	**Salpinctes obsoletus** (Say).	Stony localities — everywhere.
*24.	**Catherpes Mexicanus,** *var.* CONSPERSUS Ridgw.	Rocky gorges or precipitous cañons.
*25.	**Troglodytes ædon** Vieill., *var.* PARKMANNI Aud.	All wooded portions, chiefly on mountains.
26.	**Troglodytes parvulus** Koch., *var.* HYEMALIS Vieill.	
*27.	**Telmatodytes palustris** (Wils.).	Rushes of lakes, ponds, etc., chiefly in valley portions.
*28.	**Anthus Ludovicianus** (Gm.).	Alpine summits.
*29.	**Helminthophaga Virginiæ** Baird.	Foot-hills, scrub oaks and "mahogany" woods.
*30.	**Helminthophaga celata** (Say).	Aspen woods, near the pine region.
31.	**Helminthophaga peregrina** (Wils.).	
32.	**Parula Americana** (L.).	
*33.	**Dendroica æstiva** (Gm.).	Woods everywhere, chiefly lower portions.
34.	**Dendroica coronata** (L.).	
*35.	**Dendroica coronata** (L.), *var.* AUDUBONI Towns.	Pine region.
36.	**Dendroica nigrescens** (Towns.).	Cedar, mahogany and piñon groves.
*37.	**Geothlypis Philadelphia** (Wils.), *var.* MACGILLIVRAYI Aud.	Cañons and ravines of mountains.
*38.	**Geothlypis trichas** (L.).	Along the lower streams, or marshy meadows.
*39.	**Icteria virens** (L.), *var.* LONGICAUDA Lawr.	Along streams below pine region.
40.	**Myiodioctes pusillus** (Wils.).	
*41.	**Setophaga ruticilla** (L.).	Streams below pine region.

No.	*Species.*	*Centre of abundance during breeding season.*
*42.	**Progne subis** (L.).	Pine region and adjoining aspen woods; occasionally lower.
*43.	**Petrochelidon lunifrons** (Say).	Cliffs, everywhere below the Alpine region.
*44.	**Hirundo horreorum** Bartr.	Caves everywhere.
*45.	**Tachycineta bicolor** (Vieill.).	With *P. subis*.
*46.	**Tachycineta thalassina** (Swains.).	In cliffs with *Panyptila melanoleuca?* occasionally in holes with *T. bicolor* and *P. subis?*
*47.	**Cotyle riparia** (L.).	Earth banks, valley portions.
*48.	**Stelgidopteryx serripennis** (Aud.).	With *C. riparia*.
*49.	**Vireosylvia gilva,** *var.* swainsoni Baird.	All deciduous woods.
*50.	**Lanivireo solitaria** (Wils.), *var.* plumbea Coues.	Foot-hills with *Helminthophaga Virginiæ.*
51.	**Ampelis garrulis** L.	
52.	**Ampelis cedrorum** Vieill.	
*53.	**Myiadestes Townsendii** (Aud.).	Cedars of foot-hills and rocky gorges.
54.	**Collurio borealis** (Vieill.).	
*55.	**Collurio Ludovicianus** (L.), *var.* excubitoroides Swains.	Open places at nearly all altitudes.
*56.	**Pyranga Ludoviciana** (Wils.).	All wooded places, but chiefly lower part of pine region.
57.	**Hesperiphona vespertina,** *var.* montana Ridgw.	
58.	**Pinicola enucleator** (L.), *var.* "canadensis Briss."	
*59.	**Carpodacus Cassinii** Baird.	Cottonwoods at lower edge of pine region.
*60.	**Carpodacus frontalis** (Say).	Valley portions and foot-hills.
*61.	**Chrysomitris pinus** (Wils.).	Pine region and adjoining aspen woods.
*62.	**Chrysomitris tristis** (L.).	Valley portions.
*63.	**Chrysomitris psaltria** (Say).	Foot-hills?
64.	**Loxia curvirostra** L., *var.* mexicana Strickl.	

No.	*Species.*	*Centre of abundance during breeding season.*
65.	**Leucosticte tephrocotis** Swains.	
*66.	**Leucosticte tephrocotis,** *var.* AUSTRALIS Allen.	Alpine summits.
67.	**Plectrophanes nivalis** (L.).	
*68.	**Plectrophanes ornatus** (Towns.).	Plains — eastern base of Rocky Mountains.
*69.	**Plectrophanes Maccowni** Lawr.	With *P. ornatus.*
70.	**Centronyx Bairdii** (Aud.). Aiken.	Foot-hills.
*71.	**Coturniculus passerinus,** *var.* PERPALLIDUS Ridgw.	Meadows, val. portions.
72.	**Passerculus savanna** (Wils.).	
*73.	**Passerculus savanna** (Wils.), *var.* ALAUDINUS Bonap.	With *C. passerinus.*
*74.	**Poocaëtes gramineus,** *var.* CONFINIS Baird.	Mountain parks, chiefly.
*75.	**Chondestes grammaca** (Say).	Artemisia plains; occasionally mt. parks.
*76.	**Zonotrichia leucophrys** (Forst.).	Mountain parks.
77.	**Zonotrichia leucophrys** (Forst.). *var.* INTERMEDIA Ridgway.	
78.	**Junco hyemalis** (L.).	
79.	**Junco hyemalis,** *var.* AIKENI Ridgway.	
*80.	**Junco hyemalis** (L.), *var.* CANICEPS Woodh.	Pine region.
81.	**Junco hyemalis** (L.), *var.* ANNECTENS Baird.	
82.	**Junco hyemalis** (L.), *var.* OREGONUS Towns.	
*83.	**Poospiza bilineata** (Cass.).	Artemisia plains. (Colorado drainage only?)
*84.	**Poospiza Bellii,** *var.* NEVADENSIS Ridgw.	With *P. bilineata.*
85.	**Spizella monticola** (Gm.).	
*86.	**Spizella socialis,** *var.* ARIZONÆ Coues.	Woods, chiefly foot-hills.
*87.	**Spizella pallida** (Sw.).	Only east of the foot of the mountains; plains and foot-hills.
*88.	**Spizella pallida** (Sw.), *var.* BREWERI Cass.	Artemisia plains.

No.	*Species.*	*Centre of abundance during breeding season.*
*89.	**Melospiza melodia** (Wils.), *var.* FALLAX Baird.	Vicinity of streams up to the pine region.
*90.	**Melospiza Lincolni** (Aud.).	Mountain parks.
*91.	**Passerella iliaca** (Merr.), *var.* SCHISTACEA Baird.	Streams of the mountain parks.
*92.	**Calamospiza bicolor** (Towns.).	Plains, chiefly eastward of the mountains.
*93.	**Euspiza Americana** (Gm.).	Plains east of the mountains. Denver (Allen).
*94.	**Hedymeles melanocephalus** (Swains.).	Margin of streams below pine region.
95.	**Guiraca cærulea** (L.).	
96.	**Cyanospiza cyanea** (L.).	
*97.	**Cyanospiza amœna** (Say).	Streams and scrub below pine region.
98.	**Cardinalis Virginianus** (Briss.), *var.* IGNEUS Baird?	
*99.	**Pipilo erythrophthalmus** (L.), *var.* ARCTICUS Swains.	Eastern foot-hills and val. streams east of the mts.
*100.	**Pipilo erythrophthalmus** (L.), *var.* MEGALONYX Baird.	Western foot-hills and mountain streams.
*101.	**Pipilo chlorura** (Towns.).	Mountain parks.
102.	**Pipilo fusca** Sw., *var.* MESOLEUCA Baird.	
103.	**Eremophila alpestris** (L.), *var.* "CORNUTA Wils."	
104.	**Eremophila alpestris** (L.), *var.* OCCIDENTALIS McCall.	
*105.	**Eremophila alpestris** (L.), *var.* CHRYSOLÆMA Wagl.	Arid plains.
106.	**Dolichonyx oryzivorus** (L.), *var.* ALBINUCHA Ridgw.	
*107.	**Molothrus pecoris** (Gm.).	Chiefly the val. portions.
*108.	**Xanthocephalus icterocephalus** (Bonap.).	Marshes of the valleys.
*109.	**Agelaius phœniceus** (L.).	With *X. icterocephalus.*
*110.	**Sturnella magna** (L.), *var.* NEGLECTA Aud.	Meadows below the pine region.
111.	**Icterus Baltimore** (L.).	
*112.	**Icterus Bullockii** Swains.	All wooded portion below the pine region.

No.	*Species.*	*Centre of abundance during breeding season.*
113.	**Icterus spurius** (L.).	Streams of lower portions. Denver (ALLEN).
*114.	**Scolecophagus cyanocephalus** (WAGL.).	Foot-hills, cedar woods.
115.	**Quiscalus purpureus,** *var.* ÆNEUS Ridgw.	
*116.	**Corvus corax** L., *var.* CARNIVORUS Bartr.	Everywhere.
*117.	**Corvus cryptoleucus** COUCH.	
*118.	**Picicorvus columbianus** (WILS.).	Pine region.
*119.	**Gymnokitta cyanocephala** (PR. MAX.).	Piñon woods of foot-hills.
*120.	**Pica caudata** L., *var.* HUDSONICA J. Sabine.	Streams below the pine region.
*121.	**Cyanura Stelleri** (GM.), *var.* MACROLOPHA Baird.	Pine region.
*122.	**Cyanocitta Floridana** (BARTR.), *var.* WOODHOUSEI Baird.	Foot-hills and lower mountain streams.
*123.	**Perisoreus Canadensis,** *var.* CAPITALIS Baird.	Pine region.
*124.	**Tyrannus Carolinensis** (L.).	Lower portions and mountain parks.
*125.	**Tyrannus verticalis** SAY.	With *T. Carolinensis.*
*126.	**Tyrannus vociferans** SWAINS.	
*127.	**Contopus borealis** SWAINS.	Pine region.
*128.	**Contopus Richardsonii** SWAINS.	All woods below pine reg.
*129.	**Myiarchus crinitus** (L.), *var.* CINERASCENS Lawr.	Streams up to the mountain parks.
*130.	**Sayornis Sayus** BONAP.	Rocky arid portions, plains and cañons.
131.	**Empidonax Traillii** (AUD.).	
*132.	**Empidonax pusillus** (SWAINS.).	Willows along streams up to the parks.
*133.	**Empidonax flaviventris** BAIRD, *var.* DIFFICILIS Baird.	Pine region.
134.	**Empidonax minimus** BAIRD.	
135.	**Empidonax Hammondii** XANTUS.	
*136.	**Empidonax obscurus** (SWAINS.).	Aspen woods below the pine region.
*137.	**Ceryle alcyon** (L.).	Chiefly valley portions and parks.

No.	*Species.*	*Centre of abundance during breeding season.*
*138.	**Chordeiles popetue** (Vieill.), *var.* HENRYI Cass.	Valleys, foot-hills and parks.
*139.	**Antrostomus Nuttalli** Aud.	Chiefly valleys and foot-hills; open places.
*140.	**Panyptila melanoleuca** Baird.	Rocky cliffs, chiefly in the mountains. Limestone precipices preferred.
*141.	**Trochilus Alexandri** Bourc. and Muls.	Green River district, or western slope only? up to the parks.
*142.	**Selasphorus platycercus** (Swains.).	Chiefly the parks.
143.	**Geococcyx Californianus** (Less.).	
*144.	**Picus villosus** (L.), *var.* HARRISII Aud.	All wooded places.
145.	**Picus pubescens** (L.), *var.* GAIRDNERI Aud.	Lower edge of pine region.
146.	**Picoides tridactylus** (L.), *var.* DORSALIS Baird.	Pine region near the upper edge.
147.	**Sphyrapicus varius** (L.).	
*148.	**Sphyrapicus varius,** *var.* NUCHALIS Baird.	Aspens just below the pine region.
*149.	**Sphyrapicus thyroideus** (Cass.)	Pine region.
150.	**Centurus Carolinus** (L.).	
151.	**Melanerpes erythrocephalus** (L.).	
*152.	**Melanerpes torquatus** (Wils.).	Foot-hills and valley streams.
*153.	**Colaptes auratus** (L.), *var.* MEXICANUS Swains.	All wooded places.
*154.	**Speotyto cunicularia** (Mol.), *var.* HYPOGÆA Bonap.	Artemisia plains and foot-hills.
155.	**Glaucidium passerinum** (L.), *var.* CALIFORNICUM Scl.?	
*156.	**Bubo Virginianus** (Gm.), *var.* ARCTICUS Swains.	All wooded portions.
157.	**Scops asio** (L.), [*var.* MACCALLI Cass.?].	
*158.	**Otus vulgaris** (Flem.), *var.* WILSONIANUS Less.	Willow thickets along streams.
159.	**Falco communis** Gmel., *var.* ANATUM Bonap.	Rocky places in vicinity of water.

No.	*Species.*	*Centre of abundance during breeding season.*
*160.	**Falco lanarius** L., *var.* POLYAGRUS Cass.	Rocky cañons and open plains.
161.	**Falco columbarius** LINN.	
162.	**Falco Richardsonii** RIDGW.	
*163.	**Falco sparverius** L.	All timbered places.
*164.	**Circus cyaneus** (L.), *var.* HUDSONIUS L.	Marshes, chiefly in the valleys.
*165.	**Nisus fuscus** (GM.).	Lower wooded districts.
?166.	**Nisus Cooperi** (BONAP.).	
*167.	**Nisus Cooperi** (BONAP.), *var.* MEXICANUS Swains.	With *N. fuscus*.
168.	**Astur palumbarius** (L.), *var.* ATRICAPILLUS Wils.	
*169.	**Buteo Swainsoni** BONAP.	Everywhere; breeds chiefly among scattered aspens in parks and scrub oaks on foot-hills.
*170.	**Buteo borealis** (GM.), *var.* CALURUS Cass.	Everywhere.
*171.	**Archibuteo ferrugineus** (LICHT.).	
172.	**Archibuteo lagopus** (BRÜNN.), *var.* SANCTI-JOHANNIS Gm.	
*173.	**Aquila chrysaëtus** L., *var.* CANADENSIS L.	Rocky portions of the mountains.
174.	**Haliaëtus leucocephalus** (BRISS.).	Vicinity of rivers and lakes.
175.	**Pandion haliaëtus** (L.), *var.* CAROLINENSIS Gm.	With *H. leucocephalus*.
*176.	**Cathartes aura** (L.).	Everywhere below the pine region.
*177.	**Zenædura Carolinensis** (L).	Everywhere below the pine region.
*178.	**Meleagris gallopavo** L.	
*179.	**Canace obscura** (SAY).	Pine region and parks.
*180.	**Bonasa umbellus** (L.), *var.* UMBELLOIDES Douglas.	Pine region.
*181.	**Centrocercus urophasianus** (BONAP.).	Artemisia plains.
*182.	**Pediocaëtes phasianellus** (L.), *var.* COLUMBIANUS Ord.	Rye grass meadows.
*183.	**Lagopus leucurus** SWAINS.	Alpine summits.

No.	*Species.*	*Centre of abundance during breeding season.*
184.	**Grus Americanus** (L.).	
*185.	**Grus Canadensis** (L.).	Marshy meadows, chiefly in valleys.
*186.	**Ardea herodias** L.	Lower portions.
187.	**Demiegretta** ———sp. ?	
*188.	**Botaurus lentiginosus** Steph.	Lower portions.
*189.	**Ibis guarauna** (Gm.).	Marshes of valleys.
*190.	**Ægialitis vociferus** (L.).	Streams below the pine region.
*191.	**Ægialitis montanus** (Towns.).	
192.	**Charadrius pluvialis** (L.), *var.* VIRGINICUS Borck.	
193.	**Gallinago gallinaria** (Gm.), *var.* WILSONII Temm.	
194.	**Macrorhamphus griseus** (Gm.).	
195.	**Pelidna alpina,** *var.* AMERICANA Cass.	
196.	**Actodromus maculatus** (Vieill.).	
197.	**Actodromus Bairdii** Coues.	
198.	**Actodromus minutilla** (Vieill.).	
199.	**Ereunetes pusillus** (L.).	
*200.	**Symphemia semipalmata** (Gm.).	Streams or marshes of valleys and parks.
201.	**Gambetta melanoleuca** (Gm.).	
202.	**Gambetta flavipes** (Gm.).	
*203.	**Rhyacophilus ochropus** (L.), *var.* SOLITARIUS (Wils.).	Valleys and parks.
*204.	**Tringrides hypoleucus** (L.), *var.* MACULARIUS (L.).	With *R. solitarius.*
205.	**Actiturus Bartramius** (Wils.).	Prairies and meadows, chiefly east of the mts.
*206.	**Numenius longirostris** Wils.	Meadows of valleys.
*207.	**Recurvirostra Americana** Gm.	Marshes, chiefly in the vicinity of alkaline ponds.
*208.	**Himantopus nigricollis** Vieill.	With *R. Americana.*
*209.	**Phalaropus Wilsonii** Sab.	Ponds of val. portions.
210.	**Rallus Virginianus** L.	
*211.	**Porzana Carolina** Vieill.	Marshes of parks and valleys.
*212.	**Fulica Americana** Gm.	Ponds, chiefly in valleys.

No.	*Species.*	*Centre of abundance during breeding season.*
213.	**Cygnus Americanus** SHARPLESS.	
*214.	**Branta Canadensis** (L.).	Secluded lakes.
215.	**Branta Canadensis** (L.), *var.* HUTCHINSII Rich.	
*216.	**Anas boschas** L.	Ponds and marshy mead. chiefly in the valleys.
217.	**Anas obscura** GM.	
*218.	**Dafila acuta** (L.).	With *A. boschas.**
*219.	**Nettion Carolinensis** (GM.).	
*220.	**Querquedula discors** (L.).	
*221.	**Querquedula cyanoptera** (VIEILL.).	
*222.	**Spatula clypeata** (L.).	
*223.	**Chaulelasmus streperus** (L.).	
*224.	**Mareca Americana** (GM.).	
225.	**Aix sponsa** (L.).	
226.	**Fulix marila** (L.).	
227.	**Fulix marila** (L.). *var.* AFFINIS Forst.	
228.	**Fulix collaris** (DONOV.).	
229.	**Aythya Americana** (EYTON).	
230.	**Aythya vallisneria** (WILS.).	
231.	**Bucephala Americana** (BON.).	
232.	**Bucephala albeola** (L.).	
*233.	**Erismatura rubida** (WILS.).	
234.	**Mergus merganser** L., *var.* AMERICANUS Cass.	
235.	**Lophodytes cucullatus** (L.).	
*236.	**Pelecanus erythrorhynchus** GM.	
237.	**Larus** ——— sp?	
238.	**Larus Delawarensis** ORD.	
*239.	**Sterna Forsteri** NUTT.	
240.	**Hydrochelidon fissipes** (L.).	
241.	**Colymbus glacialis** L., *var.* TORQUATUS Brünn.	
242.	**Podiceps auritus** (L.), *var.* CALIFORNICUS Herrm.	
243.	**Podylimbus podiceps** (L.).	

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* The ducks and other *Natatores* nearly all breed in the same localities.

NOTES ON THE SPECIES IN THE PRECEDING CATALOGUE.

11. SIALIA MEXICANA. I have not seen specimens of this species from the Rocky Mountains, and do not know whether they present any features of a geographical race different from that found on the Pacific coast. On the eastern base of the Sierra Nevada, I obtained specimens without a trace of brown on the back, and with that of the breast divided into two isolated patches—one on each side—by a blue "isthmus," connecting the blue of the throat and that of the abdomen.

16. LOPHOPHANES INORNATUS. In this species the difference between Pacific coast and Rocky Mountain specimens is very marked, the former being much browner than the latter; but there being no difference in proportions, or other respects, the differentiation scarcely amounts to that of a race.

24. CATHERPES MEXICANUS, var. CONSPERSUS Ridgway. See Am. Nat., vol. vii, No. 10, Oct., 1873, p. 603.

57. HESPERIPHONA VESPERTINA, var. MONTANA Ridgway. See "Birds of California," I, p. 175. Two specimens from Mr. Charles Douglas, of Waukegan, Illinois, collected at the latter place in the winter of 1873 (January or February), are perfectly typical examples of this southern race, the characteristic features of which are the absence of the white spots on tail feathers, tail-coverts and primaries, and much narrower yellow frontlet than in the northern form. In this case we see, as in that of *Chrysomitris psaltria*, an instance of increased melanism to the southward.

64. LOXIA CURVIROSTRA, var. MEXICANA. Though this is the resident form on the high mountains of Colorado, the var. *Americana* no doubt occurs in winter. I obtained the latter in the East Humboldt Mountains in September, and it was then common there. *L. leucoptera* was also common at the same time, and a beautiful male was seen about the middle of August on that range, leading to the suspicion that the species may breed on the higher portions of the Rocky Mountains and justifying the belief that it will at least be found in winter on the mountains of Colorado.

66. LEUCOSTICTE TEPHROCOTIS, var. AUSTRALIS Allen. This form was first noticed by Mr. Allen in the "American Naturalist," and subsequently in the "Bulletin of the Museum of Comparative Zoology," as cited below. Its synonymy and characters are as follows:—

Leucosticte tephrocotis, var. *Australis* ALLEN.

Leucosticte tephrocotis ALLEN, Am. Nat., vi, No. 5, May, 1872. *Ib.*, Bull. Mus. Comp. Zool., vol. iii, No. 6, p. 177.

CH. Similar to var. *tephrocotis*, but without any gray on the head, the red of the abdomen and wing-coverts bright carmine, instead of dilute rose color, and the bill deep black, instead of mostly yellow. Prevailing color umber brown (more earthy than in *tephrocotis*) becoming darker on the head, and approaching to black on the forehead. Nasal tufts white. Wings and tail dusky, the secondaries and primaries skirted with paler; lesser and middle wing-coverts, and upper and lower tail-coverts, broadly tipped with rosy carmine, producing nearly uniform patches. Abdominal region with the feathers broadly tipped with bright carmine or intense crimson, this covering, nearly uniformly, the whole surface. Bill and feet deep black.

Male (original No. 963, Mt. Lincoln, Colorado Territory, July 25, 1871; J. A. Allen). Wing, 4·20; tail, 3·10; culmen, ·45; tarsus, ·70; middle toe, ·60.

Female (No. 960, same locality, etc.). Wing, 4·00; tail, 3·00. Colors paler and duller, with the red almost obsolete.

Hab. Mt. Lincoln, Colorado. Breeding above the timber line (Allen).

70. CENTRONYX BAIRDII (Aud.) = C. OCHROCEPHALUS Aiken. Mr. Aiken has collected a second specimen of this bird at the same locality where the first one was procured, in El Paso Co. This one, collected May 6, 1873, being in spring plumage is so decidedly intermediate between Audubon's original type of *C. Bairdii* (in worn, faded midsummer dress) and the autumnal specimen which Mr. Aiken characterized as *C. ochrocephalus* (Am. Nat., vol. vii, No. 4, p. 236) that there is every probability of all three specimens being the same species in different seasonal stages. Mr. Aiken is not to blame for describing his first specimen as a new species, for he, not having an opportunity to compare it with the original *C. Bairdii*, trusted the identification of the specimen to me, and at my suggestion described it as new, the great difference between the two specimens warranting, in my opinion at the time, a specific separation.

The last specimen collected by Mr. Aiken is in my collection (No. 2,141). Its measurements are as follows:—wing, 2·80; tail, 2·10; culmen, ·45; tarsus, ·80; middle toe, ·60. "Length, 5·62; extent, 9·04. Legs and lower mandible, flesh color; upper mandible, horn color, the tip lighter; toes and claws dusky." No. 1,266, Aiken's Coll., El Paso Co., Colorado, May 6, 1873.

Dr. Elliott Coues, the naturalist of the Northern Boundary Survey, in charge of Commissioner A. Campbell, has taken during the past summer, but since Mr. Aiken's captures, about seventy specimens of this species along the northern border of Dakota, in the neighborhood of the head waters of the Souris River. For a very interesting article in this connection the reader is referred to the "American Naturalist," vol. vii, Nov., 1873, p. 695.

I am also informed by letter from Mr. H. W. Henshaw, the naturalist of the government exploring expedition in New Mexico and Arizona, in charge of Lieutenant George M. Wheeler, U. S. Engineer Corps, that he has collected about thirty specimens during the course of their summer's explorations, in southeastern Arizona and western New Mexico. This species cannot, therefore, be longer considered one of the rare birds of North America.

71. COTURNICULUS PASSERINUS, var. PERPALLIDUS Ridgway. See Coues' Key, p. 137.

79. JUNCO HYEMALIS, var. AIKENI Ridgway. See Am. Nat., vol. vii, No. 10, p. 615; Oct., 1873.

84. POOSPIZA BELLII, var. NEVADENSIS Ridgway.

Ch. Like *P. Bellii*, but much larger and all the colors paler; purer ashy above, with very distinct streaks on the back. Wing, 3·20 (instead of 2·50); tail, 3·20 (instead of 2·50); culmen, ·35; tarsus, ·76.

Hab. Entire area of the Middle Province of the U. S.; east to Green River, Wyoming; northward resident to beyond the parallel of 40°.

87. SPIZELLA PALLIDA. The possibility of *S. pallida* Swain. and *S. Breweri* Cass. being regional modifications of the same species is rendered very doubtful by two facts, viz.: (1), that they have been taken together at the same locality, and (2) that intermediate specimens have not been seen. Mr. Allen collected numerous typical examples of both forms at Cheyenne, yet his collections did not contain a single specimen which could not be referred immediately to one or the other. *S. pallida* replaces *S. Breweri* in Lower California, thus having a somewhat remarkable range, exactly paralleled, however, by that of *Zonotrichia leucophrys*, which is abundant at the cape to the exclusion of var. *gambelii*.

91. PASSERELLA ILIACA (L.), var. SCHISTACEA Baird. Though no specimens intermediate between *iliaca* and *schistacea* have yet been found, Dr. Cooper has recently (Nov., 1872) collected, at Saticoy, California, a specimen which combines about equally the characters of *iliaca* and *Townsendii*. The latter grades into *schistacea* through Fort Tejon specimens.

98. For a synopsis of the genus *Cardinalis*, see Am. Nat., vol. vii, No. 10, p. 618; Oct., 1873.

102. PIPILO FUSCA (Swains.), var. MESOLEUCA Baird. That the *P. fusca* of Swainson and the *P. mesoleuca* of Baird are not exactly the same bird is proven by a comparison of Mexican examples with specimens from the Colorado Province of the U. S. (See Coues' Key, p. 152.)

100. PIPILO ERYTHROPHTHALMUS (Sw.), var. MEGALONYX Baird. On p. 117 of his "Ornithological Reconnoissance," Mr. Allen remarks in relation to the black Pipilos that "in Mexico, *P. megalonyx* is well known to grade through *P. macronyx* into *P. maculatus.*" This is a great mistake, for though *megalonyx* certainly does run into *maculatus*, the latter is the southern extreme of differentiation in the species, *P. macronyx* being a widely distinct species, about as nearly related to *P. chlorura* as to the forms of *erythrophthalmus.*

103, 104 and 105. EREMOPHILA ALPESTRIS (L.), vars. "CORNUTA" Wils., OCCIDENTALIS McCall, and CHRYSOLÆMA Wagl. These are three geographical races of one species, which become mingled in the course of their migrations. Var. *cornuta*, most like true *alpestris* of Europe, and indeed hardly distinguishable, breeds in the northern portions of the eastern region from Hudson's Bay to Illinois; var. *occidentalis* is a pallid, white-throated form which breeds on the northern plains; var. *chrysolæma* is a resident southern or subtropical form, of smaller size, longer bill and much deeper colors. All three become mixed in winter.

106. DOLICHONYX ORYZIVORUS, var. ALBINUCHA Ridgway. CH. Similar to eastern specimens, var. *oryzivorus*, but the black more intense and uniform, the nuchal patch immaculate creamy-white, or very pale ochraceous; scapulars and lower rump pure white, not tinged with ashy, and upper part of the rump scarcely tinged with ash. Wing, 3·90–4·10; tail, 3·10; culmen, ·55–·60; depth of bill, ·30–·35; tarsus, 1·10; middle toe, ·85–·90.

Hab. Missouri Plains and Rocky Mountains, west to Ruby Valley, Nevada; Salt Lake Valley.

115. QUISCALUS PURPUREUS, var. ÆNEUS Ridgway. In his "Key to North American Birds," Dr. Coues is at fault in several respects in his statements regarding the purple grackles of the United States. Of the present form, Dr. Coues remarks (p. 161):—

" *Obs.* The *Quiscalus æneus*, lately described as a new species by Mr. Ridgway, appears to be based upon a special plumage of *Q. purpureus;* and since it does not prove to be confined, as its describer believed, to any particular region, I should judge it not entitled to rank as a geographical variety." Both of these remarks need correction. In the first place, my *Quiscalus æneus* was based upon a form which was distributed, as its habitat was then known, over the entire region between the Alleghany and Rocky Mountains, and also the interior of British America, besides the eastern portion of the latter country, and southward to Maine. Not a single specimen had then, nor has since, been seen from any part of this vast extent of territory, which approached in characters the form peculiar to the southern Atlantic states — *Q. purpureus*. The latter was at that time supposed to extend northward to Nova Scotia; this mistake being brought about by the entire want of specimens from the New England states. Abundant material since received from all points along the Atlantic coast, however, shows that only *Q. æneus* is found from New York City and Long Island northeastward, and that it is only as far north as northern New Jersey and eastern Pennsylvania that *purpureus* extends, except as a straggler. Even at Washington, D. C., *æneus* is by no means rare, but, strange to say, when mixed with *purpureus*, still retains its own characteristics. In the parks of that city I have seen pairs of both species walking tamely about on the grass, *but never saw the two forms paired together*, and could even distinguish the two by their different appearance and actions before I was near enough to distinguish by coloration. The proportionate numbers of the two at Washington are about one pair of *æneus* to fifty or seventy-five pairs of *purpureus*. Nearer the coast, and especially farther southward, east of the Alleghanies, the former disappears altogether. My present view is, that *æneus*, *purpureus* and *aglæus*, are three climatic, or geographical races, of one species; at least they are descended from one primitive stock; *purpureus* is intermediate between the two opposite extremes or most widely differentiated forms, *æneus* and *aglæus*, but more so in habitat than in characters, for while *purpureus* passes by a gradual transition into *aglæus* through specimens from northern Florida, *æneus* is almost abruptly separated, and, even when associated geographically, preserves its own distinctive characters with such unusual uniformity that it is a question whether it is not already differentiated beyond the "varietal stage."

123. PERISOREUS CANADENSIS, var. CAPITALIS Baird.

CH. (61,084, Henry's Fork, Wyoming Ter.; F. V. Hayden.) Above fine light bluish plumbeous, becoming much lighter on the anterior portion of the back; tertials, secondaries, wing-coverts, primaries and tail feathers passing into whitish terminally, forming on the latter quite broad and distinct tips. A nuchal patch of a tint slightly darker than the back, and separated from the latter by the hoary whitish of the anterior dorsal region. Whole of the head, except the nuchal patch, with the anterior lower parts, as far as the breast, pure white; rest of the lower parts ashy-white, becoming gradually more ashy posteriorly. Wing, 5·80; tail, 6·00; culmen, 1·00. *Young* (18,440, Ft. Benton, April 23, J. A. Mullen). Generally ashy plumbeous, with a decided bluish cast to the wings and tail; orbital region, lores, forehead and nasal tufts blackish; crown, a broad space below the eye, from the bill across the auricular, with the middle of the abdomen, pale hoary ash. Wings and tail as in the adult.

Hab. Rocky Mountains north of New Mexico.

The three very well marked climatic races of this species may be defined as follows:

A. Dusky nuchal hood reaching forward to, or to in front of, the eyes; sooty plumbeous black.
  1. White frontal patch narrower than the length of the bill, blending gradually with the blackish of the crown. Upper parts umber brownish. *Young.* Entirely plumbeous-brown, the feathers of the crown bordered with paler. Beneath paler. Wing, 5·50; tail, 5·40; culmen, ·90; depth of bill, ·30. *Hab.* Northwest coast, from the Columbia to Alaska. Var. *obscurus.*[*]
  2. White frontal patch much broader than the length of the bill; abruptly defined, with a convex outline, against the dusky of the occiput. Upper parts dull plumbeous. *Young.* Entirely uniform dark plumbeous. Wing, 5·25; tail, 5·80; culmen, ·95; depth of bill, ·35. *Hab.* British America, from the Yukon district of Alaska to Maine and Labrador. Var. *Canadensis.*

B. Dusky nuchal hood confined to the nape, and bluish plumbeous.
  3. White frontal patch covering the whole pileum, and melting gradually into the plumbeous of the nape; upper parts hoary plumbeous, inclining to bluish-ash. *Young.* Bluish plumbeous, inclining to ashy-white on the crown and cheeks. Wing, 6·00; tail, 6·00; culmen, 1·00; depth of bill, ·31. *Hab.* Rocky Mountains of the United States. Var. *capitalis.*[†]

141. The STELLULA CALLIOPE Gould is also likely to occur on the western slope of Colorado. I found it as far east as the East Humboldt Mountains in eastern Nevada.

146. PICOIDES TRIDACTYLUS (L.), var. DORSALIS Baird. The American three-toed woodpeckers are clearly referrible to the

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[*] *Perisoreus Canadensis*, var. *obscurus* Ridgway. MSS.

[†] *Perisoreus Canadensis*, var. *capitalis* Baird, MSS.

European species (*P. tridactylus* L.). The latter has two well-marked climatic races — a large, very light colored northern one (var. *crissoleucus* Brandt) and a smaller, darker southern one (var. *tridactylus* L.). The former has the back white longitudinally, somewhat like our var. *dorsalis*, but differs very decidedly in other respects. One is hardly justified in saying that "all the species of this genus are unquestionably modified derivatives of one circumpolar stock" (see Coues, Key, p. 194); and the statement that "the American seem to have become completely differentiated from the Asiatic and European" is equally objectionable. A comparison of *dorsalis* and *Americanus* with the Old World forms, shows plainly that the amount of differentiation scarcely comes up to the qualifications of a difference of race. A comparison of *arcticus* with the rest also shows that bird to possess every requirement of an independent, and truly distinct species.

149. SPHYRAPICUS THYROIDEUS (Cass.). Though this species is not given in Mr. Allen's list, he nevertheless collected it in Colorado, but the specimen being in immature plumage was identified as *S. nuchalis*.

155. GLAUCIDIUM (PASSERINUM, var. CALIFORNICUM?). Not having seen the specimens of the pygmy owl collected by Mr. Aiken in Colorado, I cannot say positively that they belong to this species. They are quite as likely to be *G. ferrugineum*, which was collected in Arizona by Lieut. Charles Bendire, U. S. A. (See Am. Nat. vi, 370, and Coues' Key, p. 206.)

178. MELEAGRIS GALLOPAVO. Mr. Aiken has not informed me whether the Colorado bird is var. *gallopavo*, extending northward along the mountains, or the eastern form (var. *sylvestris*) reaching westward to the mountains by following the wooded valleys of the rivers across the plains. It is most likely, however, to be the former.

187. DEMIEGRETTA sp? This is probably the *D. Ludoviciana*. See ALLEN, Bull. Mus. Comp. Zool., Vol. iii, No. 6, p. 153.

237. LARUS sp.? This gull is probably the *L. argentatus*, var. *Californicus*, which I found breeding very abundantly at Pyramid Lake, Nevada, and less numerously at Great Salt Lake, on Carrington Island.

It is difficult to see Dr. Coues' reasons for referring this form to *Delawarensis*, since it has no points at all in common with the latter species, from which it is perfectly distinct, though clearly referrible to *argentatus*.

REGULAR MEETING, MONDAY, NOV. 17, 1873.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From Mary J. Safford Blake, Boston, Nov. 6; Samuel A. Drake, Boston, Nov. 12; A. P. Hamblet, Oct. 22; C. H. Higbee, Boston, Nov. 11; T. Morong, Ipswich, Nov.; Edward Palmer, Cambridge, Oct. 2; W. S. Perry, Geneva, Nov. 3, 11; C. P. Preston, Danvers, Nov. 10; John L. Robinson, Wenham, Nov. 15; A. Stevens, North Andover, Oct. 28; John A. Vinton, Winchester, Nov. 5, 15; Ashbel Woodward, Franklin, Conn., Nov. 3; William H. Yeomans, Columbia, Conn., Sept. 22; Cincinnati Public Library, Oct. 31; New York Genealogical and Biographical Society, Nov. 15; Wisconsin State Historical Society, Nov. 11; U. S. Dep't Agriculture, Washington, Nov. 12; U. S. Naval Observatory, Washington, Nov. 3.

The LIBRARIAN reported the following additions:—

By Donation.

BALLARD, JOSEPH, of Boston. Account of the Poor Fund and other Charities held in trust by the Old South Society of Boston. 1 vol. 8vo.

BEMIS, LUKE, of West Chester, Pa. Historical Sketches of Plymouth, Luzerne Co., Pa., by H. B. Wright. 1 vol. 8vo.

DIKE, Mrs. JOHN, HEIRS OF THE LATE. Newton's Works. 5 vols. 8vo. Miller's Retrospect. 2 vols. 8vo. Evangelical Magazine. 1 vol. 8vo. Sermons by S. Worcester, D.D. 1 vol. 8vo. Sentiments on Resignation. 1 vol. 12mo. Life of Miss Anthony. 1 vol. 8vo. Letters on Early Rising. 1 vol. 12mo. South-Side View of Slavery. 1 vol. 12mo. Sermons by E. Thayer. 1 vol. 12mo. Review of the Mexican War. 1 vol. 12mo. Letters and Papers of the late Rev. Thomas Scott, D. D. 1 vol. 12mo. Family Prayers. 1 vol. 12mo. Force of Truth. 1 vol. 18mo. Scripture Promises, by S. Clark. 1 vol. 12mo. The Family Instructor. 1 vol. 12mo. Moral Sketches by H. More. 1 vol 16mo. Chalmers' Works. 3 vols. 12mo. Salem Directories for 1837, 1842, 1846, 1851, 1855. 5 vols. 16mo. Monthly Anthology. 1 vol. 8vo. Beauties of the Spectator. 1 vol. 12mo. Boston Almanac, 1844. 1 vol. 16mo. Questions of Scripture Biography. 3 vols. 16mo. Land of Canaan. 1 vol. 12mo. Almanacs, 39. The Christian World, 91 nos. The Panoplist, 29 nos. The American and Foreign Christian World, 58 nos. Missionary Herald, 75 nos. The Home Missionary, 47 nos. African Repository, 64 nos. Miscellaneous pamphlets, 50.

UNKNOWN. Memoirs of the Marstons of Salem. 8vo pamph.

U. S. NAVAL OBSERVATORY, of Washington, D. C. Washington Astronomical Observations, 1851-1852. 1 vol. 4to. Astronomical and Meteorological Observations, 1870. 1 vol. 4to. Catalogue of Stars, 1845-1871. 1 vol. 4to. Washington Observations for 1870, Appendix. 1 vol. 4to. Washington Zones, 1846–1849. 3 vols. 4to.

J. P. Franks, of Salem, was elected a resident member.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 5. SALEM, MASS., DEC., 1873. No. 12.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, NOV. 17, 1873.

[*Continued.*]

MR. F. W. PUTNAM presented the following communication:—

ON SOME NEW FORMS OF AMERICAN BIRDS.*

BY SPENCER F. BAIRD AND ROBERT RIDGWAY.

THE following diagnoses conclude a series commenced in the October number of the "American Naturalist," and are believed to be all the undescribed North American land birds known to the authors at the present time. A more detailed account of them is given in our "History of North American Birds," soon to be issued by Little & Brown, Boston.

Leucosticte tephrocotis, var. *australis* ALLEN.

Leucosticte tephrocotis ALLEN, Amer. Nat., vi, May, 1872. IB. Bull. Mus. Comp. Zool., iii, No. 6, pp. 121, 162 and 177.
Leucosticte tephrocotis, var. *australis* ALLEN. (Ms. name on labels.)

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*Continued from the October number of the "American Naturalist," Vol. vii, 1873.

Ch. Differing from var. *tephrocotis* in having no gray on the head, the bill deep black, and the red an intense carmine; the latter, in high plumaged males, reaches forward, in a strong tinge, to the chin and cheeks. *Hab.* Mt. Lincoln, Colorado. Breeding above the timber line, at altitude of about 12,000 feet. (Types, ♂, No. 963, J. A. A.; ♀, No. 960, J. A. A., Mt. Lincoln, Colorado, July 25, 1871.)

Ammodromus maritimus, var. *nigrescens* Ridgway.

Ch. Brownish black above, the outer edges of the dorsal feathers narrowly whitish. Beneath pure white, thickly streaked everywhere with black. Supra-loral spot and bend of wing bright yellow. Wing, 2·40; tail, 2·45; culmen, ·45; tarsus, ·90; middle toe, ·60. *Hab.* Southern Florida (Indian River). (Type, No. 1855, ♂ *ad.*, Indian River, Fla,, Apr. 4, 1872. Mus. R. R.)

Remarks.—We owe this new, and very remarkable, race to the indefatigable researches of Mr. C. J. Maynard, who procured a number of specimens. The form is a very striking and extreme example of the melanistic tendency to the southward.

Zonotrichia leucophrys, var. *intermedia* Ridgway.

Ch. Resembling var. *Gambeli* of the Pacific coast, but colors purer and grayer, the dorsal streaks chestnut-brown instead of sooty-black, and the ash of the breast purer. *Hab.* Middle Province of the U. S., north to Alaska in the interior.

Poospiza Bellii, var. *Nevadensis* Ridgway.

Ch. Like var. *Bellii*, but much larger, and the colors lighter and grayer, the back with very distinct streaks. *Hab.* Great Basin of the U. S., throughout its whole extent. (Type, No. 53, 516, ♂ *ad.*, West Humboldt Mts., Nevada.)

Dolichonyx oryzivorus, var. *albinucha* Ridgway.

Ch. Nuchal patch pure white, or immaculate creamy white. Scapulars and lower back scarcely tinged with ashy. Black of the plumage more intense and uniform than in eastern *oryzivorus*. *Hab.* Plains of the U. S., from Missouri tributaries to eastern border of Great Basin. (Type, No. 1739, Mus. R. R., ♂ *ad.*, Ogden, Utah.)

Perisoreus Canadensis, var. *capitalis* Baird.

Ch. Similar to *Canadensis*, but much lighter colored, and with the bill slenderer. The head wholly white, except the nape, which is plumbeous; plumbeous of the body of a fine ashy tint. *Young* more uniformly colored, but altogether paler than the corresponding age of *Canadensis*. *Hab.* Rocky Mountains of the U. S. (Types, No. 61,084, Mus. S. I., *adult*; Henry's Fork, Wyoming Ter. and No. 18,440, *young*, Fort Benton.

Perisoreus Canadensis, var. *obscurus* Ridgway.

Ch. Much darker than *Canadensis*, the head blackish to the forehead, which is only narrowly whitish. *Young* much darker than that of *Canadensis*. *Hab.* Northwestern coast, from Oregon to Alaska. (Types, No. 8,454; *adult*, Shoalwater Bay, Washington Ter., and No. 5,904, *young*, same locality.

Cyanocitta ultramarina, var. *Arizonæ* Ridgway.

Ch. Similar to variety *sordida*, of eastern Mexico, but blue much paler and more greenish, the whole dorsal region decidedly ashy. *Hab.* Southern Rocky Mountain region of U. S. (Types, No. 18,279, *ad.*, Fort Buchanan, Arizona; and No. 8,469, *juv.*, Copper Mines, Arizona.)

Cyanocitta Floridana, var. *Sumichrasti* Ridgway.

Ch. Most nearly resembling var. *Californica*, but the superciliary white streak nearly obsolete, and the wings and tail much longer. *Hab.* Table lands of Mexico, on the eastern side. (Type, No. 42,149, Orizaba, Mexico.)

Canace obscura, var. *fuliginosa* Ridgway.

Ch. Most nearly resembling var. *obscura* (as distinguished from var. *Richardsoni*), but the colors much darker in shade, and the dark areas more prevalent. In specimens from the Sitka district the upper parts much washed with castaneous-rusty. *Hab.* Northwest coast, from Oregon to Sitka. (Types, No. 11,505, ♂ *ad.*, Cascade Mts.; No. 11,826, ♀ *ad.*, and No. 11,827, *juv.*, Chiloweyuck Depot, Washington Ter.)

Cupidonia cupido, var. *pallidicincta* Ridgway.

Ch. Much smaller, and lighter colored than var. *cupido*. Upper parts about equally barred with pale grayish ochraceous and brownish-dusky; beneath white, with faint, but sharply defined narrow bars of pale grayish brown. *Male* (No. 10,007, Prairies of Texas); Wing, 8·30; tail, 4·20; tarsus, 1·70; middle toe, 1·50. *Female* (No. 10,005, same locality); wing, 8·20. *Hab.* Southwestern prairies—Staked Plains?

Strix flammea, var. *Guatemalæ* Ridgway.

Ch. In color resembling var. *flammea* of Europe, more than var. *pratincola* of North America, but more uniform above, and more coarsely speckled below. Wing, 11·30–13·00; tail, 5·30–5·90; tarsus, 2·55–2·95 (extremes of a series of thirteen specimens). *Hab.* Central America, from Panama to Guatemala.

Syrnium nebulosum, var. *Sartorii* Ridgway.

Ch. Larger than the average of var. *nebulosum*, and the colors much darker and less tawny, being merely blackish sepia and clear white; face without the darker concentric rings of the North American form. Wing, 14·80; tail, 9·00. *Hab.* Eastern Mexico (Mirador). (Type, No. 43,131, ♀ *ad.*, Mirador; "pine region." Dr. C. Sartorius.)

Remarks.—This form is very different from var. *fulvescens* (Scl. and Salv. P. Z. S., 1868, 58) from Guatemala. I have seen a specimen of the latter collected by Van Patten, and now in the Museum of the Boston Society. The var. *nebulosum* stands between the two, being intermediate in nearly all its characters.

Scops asio, var. *Floridanus* Ridgway.

Ch. Much smaller than var. *asio* and more richly colored in the rufous plumage, the red prevailing on the lower parts, where it is much broken into transverse bars. Wing, 5·50–6·00; tail, 2·75–3·10. *Hab.* Florida. (Type, No. 5,857, Indian River, Florida.)

Scops asio, var. *enano* Lawrence. Ms.

Ch. Small, like var. *Floridana*, but the colors different. Gray plumage like that of var. *asio*, but the mottling above much coarser, and the nape with a strongly indicated collar of rounded white spots, in pairs on opposite webs. The red plumage not seen. *Hab.* Eastern Mexico, south to Guatemala.

REMARKS.—This well-marked race is founded upon a specimen from Mexico in Mr. Lawrence's cabinet, and one from Guatemala in the Museum of the Boston Society. The two are alike in colors, but, as might be expected, the southern one is smaller. This form resembles very closely the *S. atricapilla* (Natt.)—Temm. Pl. Col. 145—but may be immediately distinguished by the strongly haired toes, they being perfectly naked in *S. atricapilla*.

Falco communis, var. *Pealei* RIDGWAY.

??? *Falco niger* GMEL. S. N., 1789, 270.
Falco polyagrus CASS. B. Cal. and Tex., pl. xvi (dark figure !).

CH. Entirely brownish-black, uniform above, faintly streaked with white below. No transverse bars on inner webs of tail feathers or primaries. Wings, 14·96–15·66; tail, 8·50; culmen, ·95–1·10; tarsus, 2·00; middle toe, 2·15–2·20. *Hab.* Northwest coast of North America, from Oregon to Sitka. (Types, No. 12,622, ♀ *ad.*, Oregon. Type of Cassin's figure above quoted ! No. 45,814, ♀ *ad.* Sitka, Alaska.)

Falco columbarius, var. *Suckleyi* RIDGWAY.

CH. A miniature of *F. communis*, var. *Pealei*. Above, plain brownish-black, the tail tipped with white, but otherwise unmarked. Beneath pale ochraceous, broadly striped with sooty black. Wing, 7·35–8·56; tail, 5·25–5·75; culmen, ·56–·55; tarsus, 1·36–1·62; middle toe, 1·25–1·35. *Hab.* Northwest coast of N. Am., from Oregon to Sitka. (Types, No. 4,477. *Male*, Shoalwater Bay, W. T., and 5,832, *female* Fort Steilacoom. Based on series of six specimens.)

REMARKS.—This form represents the northwest coast region of heavy rains and dense forests, along with the black Peregrine (*F. communis*, var. *Pealei*) the *Bubo Virginianus*, var. *Pacificus*, *Scops asio*, var. *Kennicottii*, *Bonasa umbellus*, var. *Sabinei*, *Canace obscura*, var. *fuliginosa*, etc. The light-colored form of the interior is probably the *Falco Richardsonii* Ridgway (P. A. N. S., 1870, p. 145), which I am now disposed to refer to the same stock as *F. æsalon* and *F. Columbarius*. The latter two are certainly but geographical races of one species.

Regular Meeting, Monday, Dec. 1, 1873.

Meeting this evening at 7.30 o'clock. The President in the chair. Records read.

The Secretary announced the following correspondence :—

From Samuel L. Boardman, Augusta, Me., Nov. 18, 24, 28; E. W. Buswell, Boston, Nov. 19; C. H. Dall, Boston, Nov. 23; A. W. Dodge, Nov. 18; J. P. Franks, Nov. 20; George L. Gleason, Manchester, Nov. 5; Colman Harris, Nov. 14; C. H. Higbee, Boston, Nov. 24; Thomas Morong, Ipswich, Nov. 26; John Murdock, Cambridge, Nov. 24; A. V. Osborn, Waterville, N. Y., Nov. 25; C. A. Torrey, Boston, Nov. 15; U. S. Dep't of Agriculture, Washington, Nov. 17, 26. Vermont State Library, Nov. 18.

The Librarian reported the following additions :—

By Donation.

Buswell, E. W., of Boston. Miscellaneous pamphlets, 116.

Department of Agriculture of Illinois. Transactions of, for 1872.

Merrill, Chas. E., of New York. The Analytical Speller, by Edwards and Warren. 1 vol. 16mo. Miscellaneous Guide Books, 15.

Morse, E. S. Embryology of Terebratulina, by donor. 4to pamph. 1873.

Osgood, C. S. Rules and Regulations of the School Committee of Salem, 1873. 1 vol. 8vo.

Peyton, John Lewis, of Jersey, Channel Island, England. Memoir of Wm. Madison Peyton, of Roanoke, by donor. 1 vol. 8vo. London, 1873.

Putnam, F. W. The Politician's Register, by Benjamin Matthias. 1 vol. 12mo.

Quint, A. H., of New Bedford, Mass. Minutes of the General Association of Mass. for 1873.

U. S. Bureau of Education. Circulars of Informations. No. 4, 1873.

U. S. Patent Office. Official Gazette, Oct. 21, 28, Nov. 4, 11. 1873.

Waters, E. S. Miscellaneous pamphlets, 20.

Wheatland, S. G. Cornhill Magazine, 25 nos. Miscellaneous pamphlets, 41.

Willson, E. B. The Christian Freeman and Record of Unitarian Worthies, Oct., Nov., 1873.

Worthen, A. H., of Springfield, Ill. Geological Survey of Illinois. Vol. v. Geology and Paleontology, 1 vol. 4to. 1873.

By Exchange.

Archiv der Anthropologie in Braunschweig. Band vi, Heft 1, 1873.

Bowdoin College. Catalogue of the Officers and Students of Bowdoin College and the Medical School of Maine for 1873-4.

Buffalo Society of Natural Sciences. Bulletin of the, Vol. i, No. 3, 1873.

Konigliche physikalisch-ökonomische Gesellschaft in Königsberg. Shriften, Jahrg. xiii, 1872.

Naturforschenden Gesellschaft in Basel. Verhandlungen, Fünfter Theil. Viertes Heft, 1873.

Naturforschende Gesellschaft in Bern. Mittheilungen, Nos. 792-811, 1872.

Philadelphia Academy of Natural Sciences. Proceedings of, Part ii. Mch.-Sept. 1873. 8vo pamph.

Royal Society of London. Proceedings of, Nos. 138-145. 8 pamphlets. 8vo.

Société de Physique et d' Histoire Naturelle in Genève. Mémoires, tome xxii, 1873.

St. Gallische Gesellschaft of St. Gallen. Bericht, Vereinsjahres, 1871-2.

Société Vaudoise des Sciences Naturelles in Lausanne. Bulletin, 2e Série, vol. xii, no. 69, 1873.

Vermont Historical Society. Records of the Council of Safety and Governor and Council of the State of Vermont and Records of the General Conventions from July, 1775-Dec., 1777. Vol. i. 1 vol. 8vo. Montpelier, 1873. Fourth Annual Report of the Transactions of the Vermont Dairymen's Association, 1872-1873.

Yale College. Catalogue of the Officers and Students of, for 1873-74.

Zoologische Gesellschaft of Frankfurt. Zoologische Garten, Jan.-Jun., 1873. 6 pamphlets. 8vo.

Publishers. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Peabody Press. Salem City Post. Salem Observer. Silliman's Journal.

The President mentioned the recent decease of an old and highly esteemed member of the Institute, Hon. Benjamin F. Browne, of Salem, and suggested the appointment of a committee to take such notice of this event as may be deemed most appropriate; the preparation of a memoir for insertion in the publications, or otherwise, which was adopted.

The President, Messrs. A. C. Goodell, Jr., R. S. Rantoul, James Kimball and W. P. Upham were appointed on said committee.

Adjourned.

◆

Regular Meeting, Monday, Dec. 15, 1863.

Meeting this evening at 7.30 o'clock. The President in the chair. Records of preceding meeting read.

President **Wheatland** stated that the sad information which we had so recently received rendered it appropriate for the Institute to take some action in regard to the loss which it had sustained in the death of one of its most esteemed corresponding members, Professor **Louis Agassiz**, and after making a few interesting remarks, alluding to his own acquaintance with Prof. Agassiz, and the influence he exerted in the promotion of scientific research in this country, called on Dr. A. S. **Packard**, Jr., who submitted the following resolutions:—

Whereas, our corresponding member, Professor **Louis Agassiz**, has been suddenly taken from us, while in the ripeness of his years,

Resolved, That in his death our society has lost a valued and most distinguished member, who, from an early period in its history, took a deep interest in its progress.

Resolved, That American science has met with an irreparable loss in the death of one who, by his genius for original research, his organizing ability, his eloquence, conspicuous enthusiasm and untiring industry, has done more than any one else to elevate, dignify and advance science in our country, and kindle a zeal for the study of nature in the western world which will be felt for generations to come.

Resolved, That in bringing to this country, the land of his adoption, new modes of research, he has here inaugurated an original method of teaching science, which will have the happiest influence in raising up original investigators and elevating the standard of education in our colleges and common schools.

Resolved, That in his death Science, from his large and comprehensive way of looking at Nature, has lost one of its most gifted followers; Letters, a most graceful and persuasive writer, and Humanity, in his lifelong devotion to all that tends to elevate the race, one of its best types.

In these resolutions, Mr. President, continued Dr. Packard, I cannot express the sense of personal bereavement that I feel in the loss of a beloved teacher and most estimable man. In the death of one who was so outspoken in behalf of the claims of science, the younger naturalists of America have lost a stanch and fearless friend. More than any one else, Professor Agassiz, in season and out of season, urged the teaching of science in schools of all grades. He placed the methods of teaching natural history on a more natural basis, and to him we owe very largely the introduction of science-teaching into our schools and colleges. The example he has left us of untiring industry, of devotion to truth, and of loyalty to sound learning, is one we would perpetuate. His sympathy in the objects of our society was often expressed. His death is a loss to our commonwealth and our country, and in science to whom shall we look to fill the peculiar place he held?

Vice President F. W. Putnam seconded the resolutions, speaking substantially as follows:—

In me, Mr. President, these resolutions call up the deepest feelings. Well do I remember the first meeting I had with Prof. Agassiz, when in 1856 he visited the old rooms of the Institute for the purpose of examining the collection of turtles, as he was then engaged on his work on the Testudinata of North America. I shall never forget the pleasure which I experienced when showing our collection to the great naturalist, especially as that meeting was the occasion of my being so intimately associated with him for years afterwards. I should be recreant to my duty on this occasion did I not here publicly acknowledge my great indebtedness to my old master for the uniform kindness received from him and the valuable training which has enabled me to pursue my studies with the proper feeling of responsibility which every true naturalist must experience.

The teachings of Agassiz were thorough. His object was to prepare students for reliable work in the future, and his constant restraint upon them, preventing their publishing crude ideas, has been the cause of much misunderstanding regarding his method of teaching; but those who have passed through the drill never regret its enforcement.

The death of Agassiz is indeed a loss to American science; for to whom can we look as his successor in the minds of the people? It may be that his official positions can be readily filled; but who is there that will occupy, or is capable of occupying, the position which Agassiz has held in his relations to the science of the whole country?

It was his peculiar sphere to make science not only popular but respected as well, and it is to his great labors and peculiar adaptability for the work that we owe, more than to all other causes combined, the immense advances made in Natural Sciences in America during the last quarter of a century. But few men have done so much, or have had such power in influencing others in the cause of science as Agassiz. His name has been a household word, his fame and his kindness to all who loved science have brought students to him from all parts of the country, and his disinterestedness in his great work, combined with the enthusiasm with which he pursued it, has opened the purses of the rich and the treasury of the State to an extent unequalled in the annals of science. To wish, with him, has of late years been almost synonymous with to have; and well did he earn the right for it to be so. Working for the future of science in this country more than for his own immediate and personal ends, he has been met by generous men who, appreciating his objects, have given him their support, and it is only by those who have not understood, or could not understand his great aims that he has been assailed. Yes, Mr. President, in moving the acceptance of the resolutions, proposed by one who also feels the obligation which all students of Agassiz must feel for the thoroughness of their training, I must express again that our loss is more than would ordinarily be the case; as our society had many ties uniting us with Agassiz. We can count six of our present or past active officers who have been brought up under his guidance, and his principles have thus become engrafted in our Institution, while the active interest he has always taken in our labors and the cordial aid that he has been ever ready to give our society, make his loss to us great and heartfelt. Personally I feel that a blank exists which words of mine cannot describe. Let us hope that the spirit with which our great master was imbued will inspire us with like enthusiasm for the fulfilment of our labors.

As a fitting tribute to the memory of Agassiz, and an acknowledgment of the indebtedness of the Institute for the aid and example he has given it, I propose that in addition to placing the resolutions which have been offered on our records, the Institute also place over the alcove containing our most important works in Natural History, the name of Agassiz.

Mr. Putnam was followed by Prof. E. S. Morse, who was also once a pupil of Agassiz, Rev. E. S. Atwood, Rev. J. Coit, A. C. Goodell, Jr., Esq., Hon. James Kimball, and others, all of whom expressed their appreciation of the distinguished naturalist, and their sadness at his removal from the scenes of earth.

The resolutions were then unanimously adopted, ordered to be entered upon the records of the Institute, and the Secretary was instructed to forward a copy of them to the family of the deceased.

◆

Special Meeting, Tuesday, Dec. 16, 1873.

A special meeting was held this evening to celebrate the centennial anniversary of the destruction of the tea in Boston harbor, Dec. 16, 1773.

Before proceeding to the special object of the meeting, the following persons, nominated at a previous meeting, were duly elected resident members:—

John M. Bradbury of Ipswich, and Augustus D. Small, Joseph P. Fessenden, Oliver Carlton, George D. Putnam, Mrs. Francis Cox, George M. White, Caroline C. West, Ella Worcester, Sarah E. Smith, Alice Browne, J. Warren Thyng, Walter A. Hanson, Annie A. Agge, M. H. Richardson, Thomas B. Thayer, T. Lyman Perkins, Lizzie H. Hanson, John G. White, Henry W. Perkins, Mrs. George D. Putnam, of Salem.

President Wheatland opened the exercises by reading from the "Essex Gazette," of the ante-revolutionary period, a contemporary account of the destruction of the tea, and also from an original document of 1770, with the autographs of citizens of Rowley, protesting against the tax and binding themselves not to use tea nor have any dealings with the importers thereof until the obnoxious act was repealed.

Hon. James Kimball followed with an admirable paper, carefully prepared, and presenting much historical information of a very interesting character, derived largely from original sources. He gave a brief but comprehensive review of the causes which led to the transaction commemorated, with graphic details of the proceedings and personal sketches of some of the actors. Among these was Mr. Kimball's grandfather, William Russell, the father of our well remembered citizen, Col. John Russell, and the grandfather of Prof. John Lewis Russell, recently deceased. William was very active among the Sons of Liberty and participated in the destruction of the tea. He was intimate with Edes & Gill, the printers of the Boston Gazette, and with the leading patriots, and wrote patriotic articles for the paper. He was a teacher on the site of the Mayhew school, which is probably the legitimate successor of that taught by Russell. He was a participant in the revolutionary struggle, and was an inmate of the notorious Mill Prison and the Jersey Prison Ship, where he suffered many privations and contracted the disease which occasioned his death not long after the declaration of peace. While a prisoner he wrote the following lines, which were read as illustrative of the feelings engendered by the events of the times:—

Great Mars, with me, come now and view, this more than Hellish crew!
Great Vulcan, send your thunder forth, and all their fields bestrew;
Rain on their heads perpetual fire, in one eternal flame;
Let black destruction be their doom, dishonored be their name;
Send mighty bolts to strike the traitors North and Mansfield dead,
And liquid fire to scald the Crown from Royal George's head;
Strike all their young posterity with one Eternal curse,
Nor pity them, no more than they have ever pitied us.
Mill Prison (Plymouth), England, Nov. 29th, 3 P. M., 1781.
WILLIAM RUSSELL.

When this was written Mr. Russell had been confined in prison nearly two years, on a charge of piracy, treason, and rebellion, being taken prisoner on board the American Privateer Jason of Boston, John Manly, Esq., Commander.

The details presented by Mr. Kimball were listened to with close attention and profound interest. He exhibited a small portrait of the patriot in the costume of the period, and a tin tea caddy belonging to him, on which he had painted, after the disuse of tea, the inscriptions "COFFEE," — "NO TEA," which are still visible. Mr. Kimball also exhibited several books and manuscripts of historic interest, among which were a writing book with the patriotic mottoes of Mr. Russell's day, and the orderly book of the Artillery company in service in or near Boston during the revolution. These relics were examined with much curiosity.

Vice President A. C. GOODELL, Jr., next made some remarks, and urged the Institute not to forget to observe, next year, the anniversary of the most important event of the ante-revolutionary period — which was really the initial act of the actual severance of our connection with the British crown — viz.: the proceedings which took place in our Court House here in Salem, in Oct., 1774, when the Great and General Court resolved itself into a PROVINCIAL CONGRESS.

Mr. Goodell exhibited a specimen of the veritable tea which caused the outbreak celebrated, and an antique teapot formerly in use in the Warner family of Ipswich (from which came our Salem Warners, esteemed citizens in past years), dating back to 1720. The tea was received from Mrs. Jonathan Perley, in whose family it was an heirloom, having come directly from Ezekiel Cheever of Saugus, one of the "Mohawks," who wore high-top boots at the time, and whose wife, on his return home, collected and preserved the tea which had lodged in the tops of his boots.

J. WINGATE THORNTON, Esq., of Boston, followed Mr. Goodell, and gave forcible reasons why Salem should take a particular interest in this celebration and the principles it illustrated and enforced.

He referred pertinently to Hugh Peters and Sir George Downing, former residents of Salem, and their influence on Cromwell and the Commonwealth of England, and reminded the audience that Downing, a graduate of the first class of Harvard College, lived on the site of Plummer Hall, and he had probably fitted for college, and his youthful voice often resounded, within hearing of the place where they were assembled.

The meeting then adjourned, and the company were invited to one of the ante-rooms, where refreshing draughts of tea were dispensed, two or three kinds of the fragrant herb having been generously furnished for the occasion by the Oriental Tea Company. Copies of a paper entitled the "Tea-cup," containing a graphic account of the destruction of the tea and its attendant circumstances, by the learned antiquarian, Dr. N. B. Shurtleff, of Boston, were also distributed.

The celebration was a success and gave great pleasure to those who participated in it.

BULLETIN

OF THE

ESSEX INSTITUTE,

VOLUME VI.

1874.

SALEM, MASS.
PRINTED AT THE SALEM PRESS.
1875.

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., JAN., 1874. NO. 1.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JAN. 5, 1874.

MEETING this evening at 7.30 o'clock. Adjourned to Thursday, the 8th.

* * *

ADJOURNED MEETING, THURSDAY, JAN. 8, 1874.

MEETING this evening at 7.30 o'clock, adjourned from Monday, the 5th. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence:—

From John J. Babson, Gloucester, Dec. 8; Samuel A. Drake, Boston, Dec. 4; G. L. Gleason, Manchester, Dec. 23; J. L. Hawley, Brooklyn, N. Y., Dec. 1; Frank E. Hotchkiss, New Haven, Dec. 4; J. F. LeBaron, Lynn, Dec. 1, 13; H. M. Meek, Dec. 2; J. L. Robinson, Wenham, Dec. 1, 8; A. C. Goodell, Jr., Dec. 9; Sampson, Davenport & Co., Boston, Dec. 5; Wisconsin State Historical Society, Dec. 2; John M. Bradbury, Ipswich, Dec. 20, 26; Oliver Carlton, Dec. 18; George W. Clark, Newburyport, Dec. 25; N. Cleaveland, Westport, Conn., Dec. 18, 29; Henry Dexter, Cambridge, Dec. 18; Joseph P. Fessenden, Dec. 22; Lucian H. Frary, Middleton, Dec. 20; Byron Groce, Peabody, Dec. 28; P. A. Hanaford, New Haven, Conn., Dec. 19; J. C. Holmes, Detroit, Mich., Dec. 20; A. H. Hoyt, Boston, Dec. 9; J. L. LeBaron, Charlestown, Dec. 17; Marshall Pierce, Saco, Maine, Dec. 20; Sampson, Davenport & Co., Boston, Dec. 31; Augustus D. Small, Dec. 19; J. Wingate Thornton, Boston, Dec. 17; B. Westermann & Co., New York, Dec. 12, 31; Charles K. Whipple, Boston, Dec. 19; William C. Wood, Wenham, Jan. 1; Ashbel Woodward, Franklin, Conn., Dec. 19; Buffalo Historical Society, Dec. 18; Cincinnati Public Library, Dec. 24; Davenport Academy of Natural Science, Dec. 27; New England Historic-Genealogical Society, Dec. 17; New York Historical Society, Dec. 17; New York Lyceum of Natural History, Dec. 22; Ohio Historical and Philosophical Society, Dec. 19, 20; Rhode Island Historical Society, Dec. 19.

The Librarian reported the following additions :—

By Donation.

Adams, C. F., of Boston. Address on the Life, Character and Services of Wm. H. Seward, delivered at Albany, Apr. 18, 1873, by donor.

Almy, James F. Salem Journal of Fashion for Sept., Oct., Nov., Dec., 1873.

Appleton, W. S., of Boston. Description of Medals of Washington in the collection of the donor. Boston, 1873.

Barker, John G., of Lynn. Transactions of the New York State Agricultural Society for 1843–1862 inclusive. 20 vols. 8vo. Catalogue of the New York State Cabinet. 1 vol. 8vo.

Brigham, Wm., of Boston. Miscellaneous pamphlets, 10.

Butler, B. F., of U. S. House of Reps. Report of the Commissioners of the Sutro Tunnel, 1872. 1 vol. 8vo.

Hotchkiss, F. E., of New Haven, Conn. Report of the Board of Education of Conn. for 1872, 1873. 2 vols. 8vo. New Haven City Year Book for 1871–72, 1872–73. 2 vols. 8vo.

Humphreys, Brig. Gen. A. A., of Washington, D. C. Professional Papers of the Corps of Engineers of U. S. Army, No. 12. 1 vol. 8vo. Washington, 1873. Report of the Chief of Engineers for 1873. 1 vol. 8vo. Washington, 1873.

Lee, John C. Commercial Bulletin for Aug. 23, 30, Sept. 3, Nov. 22, 29, Dec. 6, 13, 20, 27, 1873.

Robinson, John. American Naturalist, 18 numbers. The Agriculturist, 23 nos. Miscellaneous pamphlets, 75.

Sampson, Davenport & Co., of Boston. Lynn Directory, 1873. 1 vol. 8vo. Providence and Rhode Island Business Directory and Register, 1873. 1 vol. 8vo. Albany Directory, 1873. 1 vol. 8vo. Manchester Directory, 1873. 1 vol. 8vo. Lawrence Directory, 1873. 1 vol. 8vo. Salem Directory, 1872. 1 vol. 8vo. Fall River Directory, 1872–3. 1 vol. 8vo. Taunton Directory, 1872. 1 vol. 8vo. Charlestown Directory, 1874. 1 vol. 8vo. Gloucester and Rockport Directory, 1873. 1 vol. 8vo. Newburyport, Amesbury and Salisbury Directory, 1873. 1 vol. 8vo. Boston Directories, 1872, 1873. 2 vols. 8vo. Troy, West Troy and Cohoes Directory, 1873. 1 vol. 8vo.

Stone, Henry R. Vocabulario De La Lengua Tagala. 1 vol. 8vo. 1835.

U. S. Patent Office. Official Gazette, Nov. 18, 25, Dec. 9, 16, 1873.

Verrill, A. E., of New Haven, Conn. Eighth Annual Report of the Sheffield Scientific School of Yale College, 1872–3.

Waters, Henry F. Miscellaneous pamphlets, 35.

By Exchange.

BIBLIOTHEQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences physiques et naturelles, Sept., Oct., Nov., 1873.

CANADIAN INSTITUTE. The Canadian Journal of Science, Literature and History. Vol. xiv. Nov., 1873.

CONN. ACADEMY OF ARTS AND SCIENCES. Transactions of. Vol. ii, Pt. II, 1873.

HISTORICAL AND PHILOSOPHICAL SOCIETY OF OHIO. Col. May's Journey to the Ohio Co, 1788-89. 1 vol. 8vo. Cincinnati, 1873. Geological Survey of Ohio for 1869. 1870, 1873. 4 vols. 8vo. Maps for 1873.

LITERARY AND HISTORICAL SOCIETY OF QUEBEC. Transactions of the. Session of 1872-3.

NEW JERSEY HISTORICAL SOCIETY. Proceedings of the. 2d Series. Vol. iii, No. 3, 1873.

PEABODY INSTITUTE OF PEABODY. Twenty-first Annual Report of the Trustees of the Peabody Institute, 1873.

WISCONSIN STATE HISTORICAL SOCIETY. Private and Local Laws of Wisconsin. 1867, 1868, 1870, 1871, 1872. 6 vols. 8vo. Senate Journal of Wisconsin, 1867, 1868, 1869. 1870, 1871, 1872, 1873. 7 vols. 8vo. Governor's Message and Accompanying Documents of Wisconsin, 1866, 1867, 1869, 1870, 1871, 1872. 11 vols. 8vo. Assembly Journal of Wisconsin, 1867, 1868, 1869, 1870, 1871, 1873. 6 vols. 8vo. Transactions of the Wisconsin State Agricultural Society, 1861-8, 1869, 1870. 1871, 1872-3. 5 vols. 8vo. First Annual Report of the State Board of Charities and Reform of Wisconsin, 1871. 1 vol. 8vo. Laws of Wisconsin, 1867, 1868, 1869, 1870, 1871, 1872, 1873. 7 vols. 8vo. Catalogue of the Wisconsin State Library, 1872. 1 vol. 8vo.

PUBLISHERS. Bossange's Catalogue. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwick's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem City Post. Salem Observer.

David Coggin, of Salem, was elected a resident member.

Mr. BYRON GROCE, master of Peabody High School, Peabody, Mass., read a communication. An abstract is here annexed.

NATURAL HISTORY IN THE SCHOOLS.

THE speaker stated his purpose to be to speak of the state of things regarding natural history in the schools as it is at present, to tell what he thought it ought to be, and to give some brief suggestions as to how the desired end might be brought about.

The present may be described by the brief but fair statement that there is no natural history in our schools, for, while it is true that botany has a place in the printed programme of most of our high schools, and is accompanied by mineralogy in others, two considerations make this fact consistent with the original statement. First, the number of pupils in high schools, as compared with the number in the lower grades, is extremely small. Second, even in high schools, the method of study is such as to indicate the light esteem in which it is held; and the few good results from the study are not seldom quoted to the discredit of the study itself. As an illustration of "how not to do it," the method of teaching in a college, with which the speaker was familiar, was cited.

A genial, well-informed gentleman of mature years and fine culture occupies the position of instructor in the department of natural science in this well endowed, vigorous and flourishing New England college. During the fifteen or twenty weeks given to botany, with three or four recitations weekly, in one year less than half a dozen plants were examined by the pupils, in the class-room, and, worse than this, the time was spent instead, in committing to memory, *verbatim et literatim*, the glossary of technical terms at the end of the book, with the definitions, on the ground that if these were first learned the things corresponding could be easily recognized on occasion.

This was the introduction to nature, and this is not a solitary example. There are hundreds of high schools and academies, as well as colleges, where thus the method curses the subject. This means a great deal. What a plea against such methods was the whole life of Prof. Agassiz!

There are being made well directed efforts, in some of our cities and towns, to have the subject introduced into the common schools, and this fact, with the other fact that the subject is in our high school programmes, permits us to estimate the condition of natural history in the schools to-day. The reason for the present state of things is perhaps unimportant, but it is not because educators for half a century have not been agreed as to the principles which govern the case. It is curious to observe that in the face of this agreement, and the fact that the statement of the principles has become so frequent in convention as to be almost stale, few in authority have essayed to take the first logical step in the indicated direction.

The speaker prefaced his remarks upon the condition of natural science as it ought to be in the schools, by saying that he was not a proficient in the subject, and in no sense a specialist, being personally more interested in other subjects.

As it was shown to be true on the one hand that natural history is not in the schools, the speaker maintained on the other hand that it ought to be there. First, for the knowledge it offered, which answered one aim of education. Second, because the knowledge is more valuable and practical than much now given. Third, it answers the purpose of a right training of faculties, according to natural and acknowledged laws. This answers a second aim of education; it answers the demand for a method which shall be in accordance with the natural development of the mind. Attention, observation, perception, discrimination, comparison, deduction, induction. Attention is first called to sensible objects. To train the senses then is important. What studies do it? Do we not need keen senses? Prof. Chadbourne says, "the material world is the means which God has appointed first to arouse the mind of man to action, and the only foundation for the highest processes of thought in the boundless field of mental speculation. It is only through the senses that this outward world can reach the mind, to excite its action or furnish it with materials." Here, then, is the first work of natural history in education, to educate the senses. Is not the introduction of drawing into our schools a testimony to the demand for educated senses as well as educated tastes?

Not only do natural history studies educate the senses to observe, but to compare and lead the mind to judge, and in other ways train the highest mental powers. As the matter now stands much of our work is a pyramid set upon its apex; we deal with babes in intellect as with grown men and women. To ring the changes upon perception and observation and then assign abstruse problems in induction is too common. To sharpen razors on a grindstone and wonder they will not shave is no worse. Nature kicks at it, scholars don't like it and rebel, mothers and fathers wonder what's the matter and worry because children are crowded so.

A part of the trouble is due as much to bad methods in arithmetic, grammar and geography as to the wrong position of those studies, or the expectation that they will do the work for the young mind that is not suited to them and is suited to natural history.

The speaker disavowed any claim for natural history as a panacea for all the ills the educational flesh is heir to, but thought that fresh air from the natural world was a necessity for healthful lungs and minds, and that this subject put naturally into the primary schools would remedy much of the difficulty in our foundation work.

The movement of education is evidently in the direction more favorable to natural history. Sup't Harris' masterly scheme of study in this department for the St. Louis schools, from lowest to highest, was an early wave, and the recent introduction of books on nature into the Boston schools and into those of other progressive cities and towns is significant.

It will soon be quite the fashion to study natural history. Salem will come to it, and Peabody and Beverly and Wenham and Essex will sooner be out of the world than out of the fashion, and we shall all study it.

Look out then that it doesn't swamp us. The book-makers will enter the field, and we shall not lack for book instruction, and since that is so easy to give, the spread of natural history will be rapid as it will be *killing*, for, mark just here, that it is not arithmetic, nor geography with which we are dealing,—it is Nature, and every unnecessary remove from herself in the study, is a move toward dulling faculties instead of quickening them, is a move toward death, not life. Nature herself should be the study if it is possible, and it almost always is, even in cities.

The nearest approach to nature in the shape of pictures, models and dried specimens should be the only permitted plan in lieu of the former. To recite from a text-book alone, here, even the interesting glossary, is to kill enthusiasm, dull perception, blind observation, and make an added routine, where it was to be especially avoided. The speaker said that the brief half-hour did not permit an exhaustive statement of the reasons for his second proposition, viz., that natural history ought to be in the schools, but trusted that with the following from Mr. Chadbourne he had given some answer to those who asked the educational value of natural history.

> "It gives problems for the deepest thought; it has power to make the earth yield her mineral treasures and to bring forth more abundantly every desirable form of vegetable and animal life. It is a volume ever open, ever inviting the mind to activity without weariness. It saves from the confinement and wear of other studies, and makes the hours of physical exercise the most profitable in storing the mind. It gives standards of the beautiful, and, by developing a true taste, gives to the student the highest type of mental cultivation and secures to him unfailing sources of enjoyment, so long as sight and hearing remain.
>
> It goes deeper still, and, revealing the divine nature, leads to the sublimest contemplations, elevating the moral nature, thus ennobling the whole man, and strengthening the only sure foundation of all that is truly noble in our natures. Shall such a study be ignored in our systems of education? Shall it be left like a beggar to find here a hearty welcome and there to be driven from the door?"

The final question is, then, What are we going to do about it? The speaker said his answer to this third point would be as brief as his propositions regarding the first two. 1. Natural history is not in the public schools. 2. It ought to be there. 3. Put it there. If two bodies or studies cannot occupy the same space at the same time, something must give way, if the school curriculum is full. The speaker was ready to accept the logic of the situation. If primary schools cannot find time for it, those in authority must be shown how it may be reading, spelling, writing, and almost arithmetic lesson, and these will at once become more agreeable. Some would find time and place in one way, some in another. Prof. Thompson, of Worcester, says there is a chance for it as a substitute for much of present English grammar.

The speaker thought that a good teacher would find the easiest way to prepare a scholar to pass a high school admission examination would be to give him through his earlier years arithmetic, geography, etc., with natural history, rather than without, and that he could be better prepared in this way for his future studies. So the logic of the matter will not abide the objection that it interferes with curriculum,—remodel the curriculum is the stern necessity.

The question of time may be partly solved by considering that the routine of daily school work needs frequent breaks and "it is often a gain to lay aside common studies and spend an hour in natural history." Even an hour a week would be of good advantage if the method were in harmony with the topic.

The objection regarding lack of knowledge on part of teachers was also considered and answered. The speaker said that if the thing was a necessity, all the lions in the way must yield. He thought teachers were more alive to the matter than school committees. In conclusion he offered as an illustration of how something might be done, an account of a plan he had tried, partly on the suggestion of Dr. Ebell, of New York. It had not been tried long enough to permit him to speak much of the results, but it at least offered a beginning. We find in the "Massachusetts Teacher" for July an account of the plan, which we give in place of an abstract of the speaker's remarks.

"Natural history finds no place in the curriculum of study in our schools (in P.), except in the high school, in the subject of botany. The high school teachers are not specially scientific in their tastes, and natural history furnishes to none of them the attractiveness or congeniality that literature or mathematics would afford.

Yet, moved by many motives which space forbids mentioning, we have organized a society of natural history. It is a voluntary organization. It has its by-laws, drawn up by a committee of members, crude but satisfactory. It admits anybody, in school and out, who will pay ten cents and sign its rules. Its object is, primarily, to collect and preserve specimens of all the plants in the limits of the town. But secondarily, exercise and pleasure are its objects. The observation and collection of minerals, insects, etc., furnishes a further attraction.

It has a president, vice-president, treasurer, two recording and one corresponding secretary, an executive committee, a cabinet committee and a librarian; and thus far all except the librarian have had employment. It requires an excursion every Wednesday afternoon, for which the executive committee arrange, and in which every member must unite or present some specimen of real value to the cabinet or pay a small fine. It keeps a careful record of all its doings and excursions, and means to get help wherever it can.

It has not yet attracted many persons of mature years to its ranks, but it has called in members from outside the school, and its influence is just beginning.

All will recognize the difficulties attending such a society, but the result is worth the care. We hire a large team, or use the horse or steam cars, or go on foot, to reach our fields of work. We take bottles, knives, baskets, a hammer, and other implements for collection, botany cases if convenient, a book for pressing, or whatever can be easily obtained,—to be carried by different members, or by each member; rubbers and old clothes for all.

We laugh and talk, and hammer stone walls, and dig roots and search meadows; we climb hills. struggle through brambles and find rich reward for our search. We hunt for crabs on the beach and chase butterflies in the field, and drink fresh water from the springs. In short, we have a good time, *and* study natural history. We carry text-books sometimes, we read in the library at others; what one learns is common property. If the afternoon of Wednesday is rainy, we spend it in the school-room examining and studying specimens. The town gives us a cabinet, and the scientific society in the neighboring city loans us a box of representative insects and other specimens of interest.

The society has collected but little except in botany. But everything is fish that comes to our nets. We have several crabs in alcohol, star-fish, sand-skippers, a lizard, a frog, shells and sea-weeds, butterflies and insects, minerals, and some last year's bird's nests — we are too pitiful to take the new ones. The cabinet has had some gifts of minerals and curiosities, and it asks and expects more.

Its members get tired and do not feel like listening to lectures after their long tramp, but they hear patiently a few words from their president, and ask and answer many questions. But they have rosy cheeks and broadening chests, and they know there is a world to observe, more clearly than they have ever known it before. They all like it; and, although not so scientifically inclined as born naturalists would be, answer, we think, every reasonable expectation. If they will learn to observe, compare, and classify, we think it may help them to buy sugar and cotton cloth, coffee and ribbons, when they become merchants; and likewise to keep these things in order. And who knows but that one of our uneasy boys, or meek and gentle girls, may find a life path open from among the hills of our excursions?

We could write much more of what we have seen and what we see ahead; of what we have done and what we intend to do. We have not tried to make the whole operation clear in these pages, but to us our experiment looks like a success. We do not think it more particularly suited for trial in High than in Grammar, or even Primary Schools. And we are very sure that in the latter something of the sort might be an invigorating auxiliary to the *study* of the *alphabet*, which is the alternate horror with folded arms and stiffened necks, in so many of our primary schools."

Mr. F. W. PUTNAM said that he had listened with great pleasure to the paper by Mr. Groce, and he congratulated the Institute that at last a teacher in our public schools had taken the platform of the Institute, and declared that, though no naturalist himself, he had become convinced that the judicious teaching of natural history in the schools would do more good to the pupils than some of the studies they now pursue. This being the stand that the Institute has taken for years, it has done all it could to bring about such a feeling on the part of the teachers, but with one or two exceptions the teachers themselves would not be taught, and they consequently did not appreciate the value of the study of nature. He felt confident that the day was not far distant when a teacher, before being considered qualified to take charge of a school would have to convince its committee that he at least was acquainted with the general structure of animals and plants, and the leading principles of mineralogy and geology, as well as with the rules of grammar and algebra, and now that natural history was no longer mainly the learning of the names of objects, the old plea that to study it meant simply to commit a list of names to memory would not hold. The study now consisted in reading the great principles and laws of nature, and though a naturalist was all the better able to study them by being familiar with an immense number of forms, which he must classify and have names for in order to make his knowledge easily known to others, yet it was not necessary for the pupils to know more than a few of the leading and common types and to be taught the general principles of nature, in order to lay a foundation which, as Mr. Groce had so well said, would be one that, throughout all walks of life, would prove of far greater value than much of the routine instruction now given, if, indeed, the word instruction can be used to express that which is forced into the young mind to-day, to be forgotten, or put aside as useless, on the morrow.

Mr. Putnam hoped that this was only the commencement of a series of similar papers to be brought before the Institute by our teachers, and he assured them that all true naturalists would give their aid in bringing about so desirable a result as the proper teaching of natural history in our schools.

Vice President, A. C. GOODELL, related some of his experiences at school, and said that these had taught him the importance of knowing *things* rather than terms; in other words, that scientific education was the only real learning.

The Secretary, Mr. JOHN ROBINSON, presented a collection of presidential medals of 1860, Lincoln, Bell, Douglass, Breckenridge; of 1864, Lincoln and McClellan; and many specimens of the tokens of 1837 to 1841. He gave a very interesting historical notice of the several issues, and spoke of the desirableness and importance of making a complete series of these memorials of the different presidential campaigns.

Adjourned.

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REGULAR MEETING, MONDAY, JAN. 19, 1874.

Meeting this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence:—

From F. E. Hotchkiss, New Haven, Conn., Jan. 12; F. B. Hough, Lowville, N. Y., Jan. 5; Charles D. Smith, Goshen, N. Y., Jan. 8; William C. Wood, Wenham, Jan. 10; W. H. Youmans, Columbia, Conn., Jan. 5; Belfast Naturalist's Field Club, Oct. 16; Société National des Sciences Naturelles de Cherbourg, Sept.; Société d' Agriculture, Sciences et Arts de la Sarthe, Nov. 27; Literary and Philosophical Society of Liverpool, Dec. 1; New York Genealogical and Biographical Society, Jan. 5; Yale College, New Haven, Jan. 14.

The LIBRARIAN reported the following additions:—

By Donation.

BOLLES, E. C. Miscellaneous pamphlets, 8.

BROOKS, Mrs. H. M. Woman's Journal for 1873.

BUTLER, B. F., of U. S. H. R. Speech in the U. S. H. R., Jan. 7, 1874, by donor. Speech of Hon. R. B. Elliott in the U. S. H. R., Jan. 6, 1874.

CROSBY, A. The Commonwealth for 1873.

HALL, E. W., of Waterville, Me. Historical Discourse at the Fiftieth Anniversary of Colby University, Aug. 2, 1870, by J. T. Champlin. Catalogue of the Colby University, 1873–74. Obituary Record, with Supplement, 1822–73.

HARRIS, D. L., of Springfield, Mass. Annual Report of the City Library Association of Springfield, May 6, 1873.

NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletin, Oct.-Dec., 1873.

RICHARDSON, W. A., of Washington, D. C. Annual Report on the State of the Finances to the Forty-Third Congress, 1st Session, Dec. 1, 1873. 1 vol. 8vo.

U. S. PATENT OFFICE. Official Gazette, Jan. 6, 13. 1874.

WATERS, J. L. Miscellaneous pamphlets, 15.

WILDER, M. P., of Boston. Address of donor at the Annual Meeting of the New England Historic-Genealogical Society, Jan. 7, 1874.

WILLIAMS, Mrs. C. F. Miscellaneous Log Books, 31.

By Exchange.

BOSTON PUBLIC LIBRARY. Bulletin, Jan., 1874.

HARVARD COLLEGE. Forty-eighth Annual Report of the President. 1872–73.

IOWA STATE HISTORICAL SOCIETY. The Annals of Iowa, Oct., 1873.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record, Jan., 1874.

PUBLISHERS. Forest and Stream. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Peabody Press. Salem Observer. Salem Post.

Mr. F. W. PUTNAM exhibited several rare and interesting fishes from the harbors of Marblehead, Salem and Beverly, as follows:—

Cryptacanthodes inornatus Gill. The Ghost-fish. A fine specimen of this very rare species was taken in Marblehead harbor by Mr. Tucker of that town, while spearing for eels through the ice in December last, and presented to the Peabody Academy of Science by Mr. Wm.

Goodwin, 4th, of Marblehead. This species was first described by Dr. Gill from a specimen obtained on the coast of Maine by Dr. Stimpson, and now in the collection of the Smithsonian Institution. Two other specimens, a male and a female, are also in the Museum of Comparative Zoology; one was taken on the coast of Maine, and the other at Swampscott, Mass. The only other specimen known is the one now exhibited.

Liparis lineatus Kroyer. Sea Snail. One of the most interesting additions to our county collection of fishes was made by Mr. J. H. Sears in October last, when he found adhering to a root of kelp in about six feet of water near Baker's Island, a fine specimen of the striped variety of this fish. While living, the stripes were red, with lighter lines between. This is the first instance of the capture of the striped variety of this species in our New England waters, though several specimens of the brown and marbled variety have been obtained. It is therefore a very important addition to our fauna, as it proves that both varieties occur in our waters, as well as in the northern waters of Europe. As there has been some question as to the *Liparis lineatus* being the same as *L. vulgaris*, I will state that from an examination of a number of specimens from European waters, embracing both varieties, and several from our own waters, I have been unable to separate the two forms specifically, and even the markings of the varieties, though so distinct in some specimens, run into each other. The name of "sea snail" was given to this fish by the old writers from its sluggish habits and its soft, slimy body. It never attains a size of more than four or five inches, and is allied to the lumpfish of our waters.

Platessa glabra Storer. Smooth Flounder. For a long time this fish was known only from the description and figure of the single specimen obtained in Massachusetts Bay by Dr. Storer, but during the last season it was found in numbers on the coast of Maine by the United States Fish Commission under Prof. Baird, and on recently looking over the collection of fishes in the Museum of the Academy, I found several specimens, including a very young one, taken in our harbor, which have been presented to the Academy at various times during the past six years by Mr. Walker, the well known fisherman of this city. who has added so many interesting specimens to our collections.

Mr. **Alfred Peabody**, one of the pioneers in the California enterprise, read a very interesting paper on the early days and rapid growth of California. After a brief review of the acquisition of the territory and the discovery of the gold fields, he proceeded to the narration of his personal experience. Immediately after the announcement of the discovery, and the knowledge that a large immigration from the neighborhood had set in, Mr. Peabody applied to John Bertram, Esq., of Salem, who, with his usual energy, engaged in the enterprise. With five others Capt. Bertram fitted out the barque "Eliza," which sailed from Salem for San Francisco, Dec. 23, 1848, under command of Capt. A. Staniford Perkins, with a cargo of provisions, clothing, mining tools, lumber, etc., and a scow for dredging. She took as passengers, Messrs. Alfred Peabody, who was part owner and supercargo, John Beadle, Jr., Dennis Rideout, Geo. R. Buffum, Geo. W. Kenny, and Jona. Nichols, of Salem, and J. H. Parker, of Boston.

The "Eliza" was the first vessel from Massachusetts fitted expressly for California with such a cargo, although Capt. Eagleston had actually cleared the brig "Mary & Ellen" for the Sandwich Islands *via* California, and sailed Oct. 28, changing his first destination on account of the fever having set in. The circumstances of the sailing of the "Eliza" were vividly narrated, including the singing of the famous California ditty, with the refrain:—

"Oh! California! That's the land for me!
I'm going to Sacramento with my wash-bowl on my knee—"

composed by Mr. Jonathan Nichols, well remembered as a humorist of rare poetical and musical talent.

The "Eliza" arrived at San Francisco, June 1, 1849, after a passage of one hundred and sixty days, landing at a wharf forty feet long, the only one in the place. They afterward took the barque up the river to Sacramento, paying a pilotage of one thousand, seven hundred and twenty-five dollars for one hundred and twenty miles, the feat having been successfully performed in six days by the best pilot upon the river. The vessel was for a long time used as a store house, boarding house, wharf, etc. Mr. Peabody traced the gradual rise and growth of the city, the prevalence of lynch law, the custom which had grown up of disregarding the Sabbath, the gambling places, the rough ways, and the disposition of everybody to do something in the way of work to make money, regardless of previous social position.

Mr. Peabody gave some very interesting details respecting the disposal of the cargo and the prices then prevailing. In one instance the sum of eighty-five dollars was paid for a bag of onions (two bushels) which passed through his hands.

Mr. Peabody's knowledge of the development and growth of business was of necessity closely connected with his personal experience in the house of Flint, Peabody & Co., begun Dec. 1, 1850. The trade was pursued with energy, and three vessels, sent out by Capt. Bertram, arrived in the spring of that year. Capt. Perkins sailed for home in June, 1850, and was the first to verify the song about returning with "a pocket full of rocks."

At about this time the need of quick passages and clipper ships became apparent. In September, 1850, a contract was made with East Boston parties to build a clipper of eleven hundred tons, and she was built, rigged and fitted so as to sail on Jan. 10 following, with a full cargo. She was one of the Glidden & Williams line, and the freight was one dollar per foot. She was named for Capt. John Bertram, who had manifested so much energy and spirit in this new trade. The croakers said the vessel was "thrown together," and would not last long; but she was sold eighteen years ago and has been running ever since. On the 12th of last month she was in New York, and the captain, her present owner, wrote to a gentleman in this city, asking for a portrait of Capt. Bertram to hang in her cabin. This was the first clipper built for the California trade; but she was soon followed by the "Witch of the Wave" and four others, averaging fifteen hundred tons each.

In 1853, Messrs. Bertram and others, with Flint, Peabody & Co., established the ice trade; but afterwards this article was introduced from Sitka (Russia) at lower cost than from Boston, and so this trade was destroyed.

In June, 1851, a great fire occurred, destroying property to the amount of four million dollars, and burning out Messrs. Flint, Peabody & Co., who lost heavily, having no insurance.

As illustrating the changes which have taken place in the commerce of San Francisco, the San Francisco almanac for 1859 gives a statement of the amount paid as freight to, and the number of tons of cargo carried by, and the vessels consigned to, a single house, Messrs. Flint, Peabody, & Co., agents for Messrs. Glidden & Williams' line between Boston and California, commencing with the arrival of the first ship of that line, the J. Bertram. During six years there were two hundred and seven ships, three hundred and forty-five thousand, three hundred and ninety-eight tons of goods—the amount of freight being $5,965,802.14. In one year, four ships arrived in a single month. In 1859 Messrs. Flint, Peabody & Co. received a full cargo of flour from Boston, six thousand, five hundred barrels, which paid a fair freight. In 1869, during the six months from July to December 31, the shipments *from* San Francisco of wheat and flour were equal to one million, six hundred thousand barrels. The same year the wool clip of California was fifteen million pounds, all of fine quality. The value and destination of treasure shipped from San Francisco in sixteen years, from 1854 to 1869, are as follows:—

Eastern ports,	$462,088,066
England,	167,703,292
China,	68,050,250
Panama,	9,053,526
Other ports,	17,598,824
	$724,493,958

The duties on imports in 1859 were $8,339,384.14. The value of mining stocks sold at the broker's board at San Francisco the same year was thirty millions. During the past year only two ships loaded in Boston for San Francisco.

In 1854 the amount of gold mined had been $15,000,000; sixteen years later, it had increased to nearly $725,000,000.

In 1859, sixty-five hundred barrels of flour were *imported* into San Francisco from Boston; in 1869, wheat and flour equivalent to one million, six hundred thousand barrels were *exported* from San Francisco, and in 1873 the wheat crop of California was equal to eight million barrels of flour.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS.; FEB., 1874. No. 2.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JAN. 19, 1874.

[*Continued.*]

MR. JOHN ROBINSON, after expressing his pleasure at the reading of the foregoing paper, moved that the thanks of the Institute be presented to Mr. Peabody, and that a copy be requested for printing in the Publications of the Institute—adopted.

Mr. F. W. PUTNAM followed, and alluded to the sailing of the barque "Eliza" in 1848, and his presence on the wharf on the interesting occasion, he being then a boy and entering into all the enthusiasm of the crowd that had there assembled, and said that he had listened with great interest to the paper by Mr. Peabody, from its bearings on archæological facts. Here was a case illustrating the sudden rise of numerous and large towns, embracing extensive works, during his own boyhood, and in less than a quarter of a century many of their well known and thriving towns and settlements had been deserted and left to decay; the agencies of nature had been at work, and now the sites of many once extensive mining towns could only be made out by researches similar to those by which prehistoric cities were re-discovered. Such facts should certainly teach us to be careful in our deductions regarding the time required for the rise and fall of more ancient cities.

After remarking on the older and prehistoric races of men that had once inhabited our country, he alluded to the probably more recent Indian race found in New England at the time of its settlement by our forefathers, and passing in review some of the more ancient relics from the graves of the departed race, he exhibited a small collection of articles and two human skulls which he considered as possessing great interest in connecting the past with the present, and as illustrating the transition period in this country, when people of the stone age were brought suddenly face to face with the highest civilized race.

The collection referred to consisted of two well preserved Indian skulls, two fish spears cut out of bone, quite a number of shell beads, or wampum, a pair of iron scissors very much rusted and corroded, and a brass handled pocket knife of very old style. These had all been found in a few Indian graves that had been discovered in digging away a gravel hill at Saugus, on the farm of Joseph Ballard, Esq., who presented them to the Institute. The association of the various articles found in the graves shows that the habit of depositing the choice possessions of the departed with the body in the grave was continued after the Indians had come in contact with the whites.

Mr. Putnam then alluded to the probably universal custom with uncivilized races, of depositing articles of various kinds in the grave with the body, or of making offerings at the grave, a custom that, more than all others, has enabled us to discover so much in the history of what would otherwise be indeed the lost races of the world; and he thought that our own tender offerings of flowers, at the graves of our loved and gone, were but a civilized method of expressing the same feeling that induced the savage and barbarian to place with the body the articles that had been cherished while living, or to offer sacrifices at the grave. Though with the savage the cause of the act is to provide for the future and unknown life, while with us it is a tribute to the life that has passed.

The SECRETARY spoke of the good condition and extent of the continental paper currency in the rooms of the Institute, and mentioned that the exchange of specimens which he was arranging with William S. Vaux, Esq., of Philadelphia, if consummated, would add very materially to its interest and value. He moreover solicited contributions to this department of our collections while the same may be found in many of our old houses before being irrevocably lost.

Harriet E. Carlton, Frank N. Chapman, Andrew Fitz, Horace S. Perkins, Octavius B. Shreve, John P. Tilton, all of Salem, and Albert S. Rowell, of Lynn, were elected resident members.

REGULAR MEETING, MONDAY, FEB. 2, 1874.

MEETING this evening at seven and one-half o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence :—

From A. A. Agge, Jan. 22; Mary J. Safford Blake, Boston, Jan. 26; E. P. Boon, New York, Jan. 20; Francis N. Chapman, Jan. 28; Andrew Fitz, Jan. 20; G. L. Gleason, Jan. 20, 29; James J. H. Gregory, Marblehead, Jan. 27; Edward W. Hall, Waterville, Maine, Jan. 24; O. B. Shreve, Jan. 24; A. A. Scott, Saugus, Jan. 28; Walter P. Willett, New York, Jan. 19; Boston Society of Natural History, Jan. 22; Buffalo Historical Society, Jan. 26; New York Mercantile Library Association, Jan. 28; New England Historic-Genealogical Society, Jan. 27.

THE LIBRARIAN reported the following additions :—

By Donation.

APPLETON, FRANCIS H., of Boston. Bulletin of the Bussey Institution, 1874.

BUSWELL, E. W., of Boston. Transactions of the Mass. Horticultural Society for 1873.

CUTTER, ABRAM E., of Charlestown, Mass. Annual Report of the School Committee of Charlestown for 1873.

FITTS, JAMES H., of Topsfield. Manual of the Congregational Church in West Boylston, by donor. Genealogy of the Fitts or Fitz Family in America, by donor.

HANAFORD, P. A., of New Haven, Conn. Historical Sketch of the First Universalist Church and Society in New Haven. 1873. Constitution, By-laws and Register of the First Universalist Church in New Haven. 1874.

HOLMES, JOHN C., of Detroit, Mich. Second Annual Report of the Michigan State Pomological Society for 1872. 1 vol. 8vo. Lansing. 1873.

PACKARD, A. S., Jr. Our Common Insects, by donor. 1 vol. 12mo. Salem, 1873. Catalogue of the Phalænidæ of California. No. 2. Boston, 1874.

SEVENTH-DAY ADVENTIST TRACT SOCIETY OF NEW ENGLAND. The Constitutional Amendment, a Discussion. 1 vol. 12mo. Battle Creek, Mich. 1873.

STEVENS, CAROLINE. Sermons at Salem on the Death of Gen. Geo. Washington. 1 vol. 8vo.

TUCKER, JONA. The Autobiography of an Octogenarian, by D. N. Prime. 1 vol. 12mo.

UPTON, E. W., of Peabody. The Upton Memorial by John A. Vinton. 1 vol. 8vo. Bath, Me. 1874.

UPTON, JAMES. The Upton Memorial, by John A. Vinton. 1 vol. 8vo. Bath, Me. 1874.

U. S. PATENT OFFICE. Official Gazette for Jan. 20, 27, 1874.

WEBBER, CHAS. H. Laws of North Carolina. 1797.

WHEATLAND, S. G. American State Papers. 8 vols. 8vo. Adjutant General's Report for 1863, 1864. 2 vols. 8vo. Railroad Returns, 1864. 1 vol. 8vo. Manual for the General Court, 1861, 1862, 1867. 3 vols. 12mo. Twenty-First Annual Report of the Board of Education. 1 vol. 8vo. Salem Directory, 1859. 1 vol. 12mo. Boston Almanac, 1858. 1 vol. 16mo. Miscellaneous pamphlets, 205.

By Exchange.

Boston Public Library. Bulletin of the, for Dec., 1867, Feb., 1868, Dec., 1869. Second and Fourth Annual Reports of the, 1854, 1856.

Entomologischen Vereine zu Stettin. Entomologische Zeitung. Jahrg 34. 1 vol. 8vo. 1873.

Kongliga Vetenskaps-Societeten zu Upsala. Nova Acta, Vol. viii. Fasc. ii, 1873. Bulletin Météorologique Mensuel, Vol. iv, Nos. 1-12, 1871-72. Vol. v, Nos. 1-6, 1872 73.

Königlichen Akademie Gemeinnützigeb Wissenschaften zu Erfurt. Jahrbücher, Neue Folge, Heft. vii. 1873. 1 vol. 8vo.

Literary and Philosophical Society of Liverpool. Proceedings, No. xxvii, 1872-73. 1 vol. 8vo. 1873.

Naturhistorischer Verein der preussischen Rheinlande und Westphalens in Bonn. Verhandlungen, Jahrg, 29, 30. 3d Folge, ix and x. Bd., 1872-73. 2 vols. 8vo.

Naturwissenschaftlichen Gesellschaft zu Chemnitz. Vierter Bericht, 1871-72.

New England Historic-Genealogical Society. Proceedings of the, at the Annual Meeting, Jan. 7, 1874.

New York Lyceum of Natural History. Annals, Nos. 6, 7, 8, 9. 1872-1873.

Physikalisch-medicinische Gesellschaft in Würzburg. Verhandlungen, Neue Folge, Bd. iv, Heft. 2-4. 1873. Bd. v, Heft 1, 2, 3, 1873.

Public Library of Indianapolis. Catalogue of the, for 1873. 1 vol. 8vo.

Senckenbergischer naturforschende Gesellschaft zu Frankfurt a M. Bericht, 1872-73. 1 vol. 8vo.

Société de Physique et d' Histoire Naturelle, Genève. Mémoires, Tome xxiii. 1 vol. 4to.

Publishers. American Journal of Science. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailor's Magazine and Seaman's Friend. Salem Post. Salem Observer.

John E. Lyon, of Salem, was elected a resident member.

Richard A. Proctor, of London, England, was elected a corresponding member.

The Secretary, Mr. John Robinson, stated that the donation of paper money from W. S. Vaux, Esq., of Philadelphia, had been arranged in the collection of the Institute.

He gave a very interesting account of the continental paper currency, and alluded especially to the recent very valuable addition of some one hundred and fifty specimens of the currency of the colonies of New Jersey, Pennsylvania, Delaware and Maryland, and also of the United States issue. Many of these specimens are very rare and interesting.

Mr. F. W. **Putnam** gave an account of the Blackfish shot in Salem harbor in October last by Capt. Charles Osgood, and now on exhibition. He also exhibited a stereoscopic view of the animal, and stated that a large photograph was to be taken.

Unless this species proves on comparison to be the European *Globiocephalus melas*, it will be known under the name of *G. intermedius*, given it by Dr. Harlan,* who first described the American animal from a specimen captured in our harbor in September, 1823. Dr. Harlan's specimen was sixteen and one-half feet in length, and his description applies to the present specimen, though the figure which he gives is very poor and would mislead in several particulars.

Mr. Putnam then gave an account of the several families of cetaceans and the general structure of the order, and stated that while the blackfish was more closely united to the grampus and dolphins than to the large and true whales, yet, in the general acceptance of the term, the blackfish was a whale. He then gave the following notes, taken soon after the specimen was captured.

Head very blunt. A slight protuberance of the upper jaw beyond a line dropped from the top of head, which is slightly rounded. Line of back to the dorsal fin, straight; posterior to the fin the outline is slightly descending to near the tail fin, where it drops suddenly to the base of the fin. The abdominal outline is flat from tip of under jaw to the pectorals, thence slightly bulging for the length of the pectorals, thence ascending to the tail fin. Body rounded; sides of head and tail compressed. Jaws nearly straight. The teeth in front of jaws had been dropped, leaving but ten teeth on one side of upper jaw and nine on the other, while the under jaw had ten on one side and eight on the other. The teeth small and bluntly pointed. Upper jaw fourteen inches in length; under thirteen inches. Pectoral fins long, narrow and pointed. Blow hole in centre of top of the head, directly over the eye; width of the opening three and three-fourths inches.

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*Journal Academy Natural Sciences of Philadelphia, vol. vi, part i, p. 51, pl. 1, 3 (1829).

Eye three and one-half inches distant from angle of mouth, small, one and one-quarter inches long and one-half an inch in transverse diameter. Height of head from tip of upper jaw to top of forehead, one foot. Distance from forehead to blow hole, one foot, seven inches; from blow hole to base of dorsal fin, two feet, nine and one-half inches; length of dorsal fin, three feet, one inch; distance from anterior base of dorsal to its point, measured along the curve of the edge of the fin, two feet, eleven inches; distance between the same points measured across the fin, two feet, eight inches; from the point of the fin to its posterior base, measured along its back edge, one foot, four inches, and on a vertical line, one foot. Distance from anterior base of dorsal to base of tail fin, nine feet; to tip of flukes, eight inches more. Expanse of flukes, three feet, four inches. Distance from tip of under jaw to anterior base of pectoral fin, two feet, two inches; width of pectoral at base, eleven inches; at about its anterior third, eleven inches; length of pectoral, four feet. Distance from tip of under jaw to base of penis, seven feet, six inches; to anus, nine feet, one inch; to centre of flukes, fourteen feet, two and one-half inches. Total length measured over the surface of the body, fourteen feet, five inches. Penis slender, six inches long, enclosed in a sheath. Greatest circumference of body at anterior base of dorsal, six feet, eleven inches. Circumference at penis five feet, ten inches; at anus, four feet, eight inches. Distance between pectorals, one foot, two and one-half inches.

Color lustrous black above, lighter on sides, under parts with a broad white band, heart-shaped forwards on the throat, extending backwards, gradually narrowing to the anus.

The stomach contained a number of bones of codfishes and several large pieces of kelp. The intestine measured one hundred and eighty-nine feet in length.

Mr. C. H. **Higbee**, of the curators on the Arts, reported that arrangements had been made with Prof. Walter Smith, principal of the State Normal Art School in Boston, to deliver a lecture on "Art Studies" at the next meeting of the Institute, and that several persons had expressed great interest in this object and would aid in sustaining meetings for the discussion of subjects on art matters and contribute to occasional exhibitions of paintings, drawings and other specialties in this department, that may be held under the auspices of the Institute.

QUARTERLY MEETING, WEDNESDAY, FEB. 11, 1874.

MEETING this afternoon at three o'clock. The President in the chair.

William S. Vaux, of Philadelphia, was elected a corresponding member.

After the transaction of the ordinary business of the meeting, adjourned.

◆

REGULAR MEETING, MONDAY, FEB. 16, 1874.

The meeting was devoted to a lecture by the Rev. Charles Kingsley, the distinguished canon of Westminster, which was followed by a reception. This was the introductory lecture of the supplementary course of entertainments under the auspices of the Institute, and was Mr. Kingsley's first public lecture in America. He was introduced to the audience by Vice President D. B. HAGAR, who said:—

LADIES AND GENTLEMEN:

I am sure that it is with no common pleasure that we welcome to our platform, to-night, the distinguished lecturer. We welcome him not only as one whose works have been read by us with delight, but as our personal friend; for surely he is a friend to us who has contributed so much to us, and we, from admiring gratitude, certainly are friends of his. I have the honor of introducing to you Charles Kingsley, Canon of Westminster, and Chaplain in ordinary to Her Majesty the Queen.

Mr. KINGSLEY, after a few prefatory remarks, proceeded to discourse of Westminster Abbey, from what he termed a puritan and international standpoint. His presentation of the subject was masterly, and one soon forgot the peculiar style of delivery in the great thoughts, the glowing periods, and the inspiring earnestness of the speaker.

THE RECEPTION.

At the close of the lecture a reception was given in the rooms of the Institute, where many ladies and gentlemen were assembled to greet and welcome the lecturer. After a period of social intercourse the company were invited to partake of refreshments which were provided in Cassell's usual style; a profusion of flowers from the greenhouses of Francis Putnam being conspicuous ornaments gracing the tables. The divine blessing was invoked by Rev. E. S. Atwood, and at the conclusion of the feast, the President of the Institute, **HENRY WHEATLAND**, addressed the company as follows:—

LADIES AND GENTLEMEN:

We are assembled to welcome the distinguished gentleman, whose eloquent lecture we have listened to with such pleasure this evening. And it is highly fitting, sir, that Salem should extend to you a cordial welcome—the oldest municipality in the colony of Massachusetts; settled in 1626 by Roger Conant and his companions; the sites of several of their dwellings are passed in going from this place to the railroad stations; many of their descendants are daily in our streets, and some are with us this evening. Several of the sons of Salem have, in the past, as well as recently, had peculiar relations with the mother country. Two instances may be cited: In 1638 Emmanuel Downing of the Inner Temple, London, came to Salem, and had his residence on this spot; his son George, a lad of fourteen summers, was fitting, under the tuition of the Rev. John Fisk, for the college, where he graduated in 1642, and is the first on the roll of the Salem alumni of Harvard. Afterwards, he went to England, entered the service of Cromwell, became his Minister to the Hague, which office he retained after the restoration, and, from Charles II, received a baronetcy. Marrying Frances, sister of the first Earl of Carlisle, he became united with "the blood of all the Howards," and consequently took a high position among the leading families of the realm. Two centuries pass; another son of old Salem, born in that part now within the township of Peabody, goes to London, engages in business, is eminently successful, distributes his money by millions in founding a noble charity in London and institutions in this country for the promotion of education and general information among the people, and has tendered to him by the Queen a baronetcy, which he respectfully declines, preferring to remain an American citizen. After his death, two nations, by their representatives, two state governments, several municipalities and various literary and scientific societies and other institutions, united in doing honor to his memory. A parallel probably cannot be found on the pages of history. His remains for a short time were deposited in your Westminster Abbey, but now rest in yonder cemetery, within the limits of this city, and in the immediate proximity to the place of his birth and all the associations of his early life.

Notwithstanding, sir, this building and the portraits, books and various relics therein deposited have each a history, and many of the incidents connected therewith have an important historical value, yet the site on which it is erected is not devoid of interest, and is noted not only as the place where Downing lived in early life, but where Prescott first saw the light of day; and in the immediate vicinity, a few rods in one direction, is the birthplace of Bowditch, and about the same distance in another that of Hawthorne — three brilliant constellations in the fields of history, science and letters.

Aside from these considerations there is one, which cannot be passed over in silence, that should induce us on this occasion to tender to you our most grateful acknowledgment, and to express to you the pleasure we all feel in having you as our guest, this evening. The nucleus of the Institute, around which cluster the various departments, as now constituted, was the Natural History Society, organized some forty years since by a few persons, some scarcely out of their teens, devoted and humble workers in the cause of natural history, and desirous that a taste for its study should be diffused throughout the community, and that a complete record of all the natural productions of this section of our state should be made and printed. Many of these early pioneers have now passed to the better land; a few remain— a connecting link between those days of small things and the present. Your writings, having contributed so much to the promotion of those objects which we have so long been striving to accomplish, will always make us your debtor, and for which we cannot cease to extend grateful acknowledgments.

Dr. Wheatland next called up Mayor COGSWELL, who said:—

It gives me great pleasure, Mr. President, to unite with you in doing honor to the distinguished guest of this occasion, and in behalf of the inhabitants, and in their name, to bid him welcome to the city of Salem, where he comes not as a stranger, but only to find that here as elsewhere his fame had long since preceded him. Whether he comes as the peerless divine, the vigorous, gifted and sympathetic author, or, better still, as the man of broad and generous sympathies with all struggling for a higher, better level of humanity, he is alike welcome to our hospitality and good cheer. That he has chosen this city in which first to present himself in person to the American public is a matter of congratulation for us, and I feel that I can assure him a cordial welcome wherever he may go; and that his experiences in this country may be as agreeable and useful as his recital of them hereafter will be frank and honest is the best wish I can express for him or for you who have come to know him. Again, sir, I bid him welcome to Salem.

Mr. KINGSLEY replied as follows:—

I thank you and the gentlemen who have just sat down for all your kindness. I will not trespass on you with a long speech. I think you have heard enough of my voice this evening, but I cannot sit down without expressing the conviction which has already ripened, that my stay in America is to be, by the blessing of God, a very pleasant one. I have met with nothing but kindness ever since I touched the shore of this land. My highest desire is to be able to interest such Americans as may listen to what I have to say, and that at some time upon the other side of the water I may meet some of those who have been my kind hosts here, and try to repay in my humble way the obligation under which they have laid me. I do feel it an honor to me that Salem should have been the point at which I made my début in this new world, and I shall always cherish most grateful recollections of that which has to-night brought me to feel that this is one of the great little spots of the earth. Ladies and gentlemen of

Salem, I thank you most heartily for your hospitality, and I wish your city may prosper for many years to come as it has prospered already.

The President of the Massachusetts Senate, Hon. GEORGE B. LORING, was next called upon, and made an eloquent response, concluding with the sentiment:—

HAWTHORNE and KINGSLEY, the two men of thought, culture and feeling whose duty and privilege it has been to teach Englishmen and Americans that they are of one nationality.

Other interesting addresses were delivered by Vice President F. W. Putnam, Rev. E. C. Bolles, Vice President A. C. Goodell, Jr., and Rev. E. S. Atwood, who were successively called upon, and the company separated at a seasonable hour, after an evening of great intellectual and social enjoyment.

After the reception the meeting was adjourned to Friday evening, Feb. 27, at 7.30 o'clock.

* * *

ADJOURNED MEETING, FRIDAY, FEB. 27, 1874.

MEETING was held this evening, according to adjournment, at 7.30 o'clock. The PRESIDENT in the chair. Records read.

Henry J. Pratt, Abraham Towle, Nathan P. Cutler, Anna C. Cutler, all of Salem, were elected resident members.

Stephen M. Allen, of Boston, was elected a corresponding member.

Prof. **Walter Smith**, of the State Normal Art School, of Boston, occupied the hour of the meeting with some interesting remarks on "Art Studies." The subject was treated under four heads. First, art museums. In this connection he explained their advantages in any city, giving as it would an opportunity to those who have artistic ability to display their own productions, or gratifying the people by exhibiting the art treasures of the favored few. He advocated the collection of antiquities, as a great desire was expressed by many people to know what had been going on in past ages in that particular line of enquiry. A museum of antiquities not only aided this interest, but enabled one to see the progress of manufacture. A picture gallery in connection was of course a most valuable adjunct. Secondly, occasional exhibitions of specialties aided very much in awakening a general interest in this object. Thirdly, a studio, with the requisite facilities, where members can pursue their work under the most favorable advantages. Fourth, lectures and discussions.

Mr. Smith, in the course of his instructive lecture, gave an account of some of the art schools in England, especially of that at South Kensington. He showed the important and intimate connection which exists between art and the great industries of a country, illustrating the subject by a reference to the advance made, of late years, in England, in various departments of labor.

Mr. Smith also alluded to the subject of drawing as a common school study. He strongly favored the teaching of drawing, as affording a useful preparation for many industrial arts, and as being, therefore, of great practical use.

The lecture afforded much valuable instruction, and was highly appreciated.

The **President** expressed his pleasure in listening to the communication of Mr. Smith, and suggested some plans by which the objects proposed could be accomplished ere long; it would require, however, the untiring industry and perseverance of some two or three interested and zealous persons, to produce the desired results. He mentioned that the adjoining estate of the late Col. F. Peabody was for sale, and spoke of the desirableness to obtain the same; this, in connection with the Plummer Hall estate, would afford a fine site for the erection of suitable buildings for scientific and art museums, libraries, reading and lecture rooms, and for other purposes.

Vice President F. W. **Putnam** followed, and expressed his interest in this movement. He alluded to the success that had attended the department of Natural History, and considered that a like success would undoubtedly attend the art department if the same labor should be given to the furtherance of that object.

Vice President D. B. **Hagar**, after some preliminary remarks, moved that the thanks of the Institute be tendered to Prof. Smith for the interesting and valuable suggestions which he had presented to our consideration this evening on the subject of art studies.

Unanimously adopted.

Mr. Hagar also moved that the subject that had been introduced this evening be continued at the meeting of the Institute on Monday evening, March 16.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., MARCH, 1874. No. 3.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, MARCH 2, 1874.

MEETING this evening at seven and one-half o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence:—

From Charles H. Bell, Exeter, N. H., March 2; John Batchelder, Lynn, Feb. 10; Phillips Brooks, Boston, Feb. 16; Charles T. Brooks, Newport, R. I., Feb. 14; D. P. Corey, Boston, Feb. 27; W. C. Endicott, Feb. 16; J. H. Fitts, Topsfield, Feb. 5; George L. Gleason, Manchester, Feb, 2, 7, 9, 23; William Graves, Newburyport, Feb. 7; Byron Groce, Peabody, Feb. 19, 24; J. C. Holmes, Detroit, Mich., Feb. 6; M. L. Huntley, South Lancaster, Feb. 12; Robert Manning, Feb.; J. Munsell, Albany, N. Y., Feb. 10; Daniel A. Rogers, Chicago, Ill., Feb. 28; N. A. Very, Feb. 16; Rose S. Whiting, Boston Highlands, Feb. 6, 10, 20; Naturforschende Gesellschaft in Emden, Oct. 15; Société de Physique et D' Histoire Naturelle de Genève, Sept. 15; Society of Antiquaries of London, Feb. 3; Sociètè des Sciences Naturelles de Neuchatel, Oct. 2; New York State Library, Feb. 9; New York Genealogical and Biographical Society, Feb. 14; New York Historical Society, Jan. 26; Sociètè Royale des Sciences à Upsal, Nov.

The LIBRARIAN reported the following additions:—

History of Lewis County, by F. B. Hough. 1 vol. 8vo. Albany, 1860. Gazetteer of the State of New York, by F. B. Hough. 1 vol. 8vo. 1872. Memorials of the

Death of Washington. 2 vols. 8vo. Siege of Charlestown, 1780. 1 vol. 8vo. Siege of Savannah, 1779. 1 vol. 8vo. History of the Bills of Credit, by J. H. Hitchcock. 8vo pamph.

By Donation.

APPLETON, W. S., of Boston. A Rough Sketch of the Appleton Genealogy. 1873

BUSWELL, E. W., of Boston. Schedule of Prizes offered by the Mass. Horticultural Society for 1874.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 15.

HAWKINS, DEXTER A. Report on Compulsory Education, Dec. 30, 1873.

HOUGH, F. B., of Lowville, N. Y. Meteorology of New York, 1850–1863. 1 vol. 4to. Transactions of the American Institute, 1853, 1867. 2 vols. 8vo. Transactions of the New York State Agricultural Society, 1866, 1867. 3 vols. 8vo. Assembly Documents, 1843–44. 2 vols. 8vo. Digest of Claims, 1810–1858. 1 vol. 8vo. William's Register, 1834, 1835, 1843. 3 vols. 12mo. Manual for the Legislature of New York, 1854, 1858, 1871. 3 vols. 12mo. Report of the Secretary of State on the Criminal Statistics of New York, 1854, 1857. 2 vols. 8vo. Report of the Canal Commissioners of New York, 1860. 1 vol. 8vo. Buffalo City Directory, 1855. 1 vol. 8vo. Miscellaneous pamphlets, 32.

LEE, JOHN C. Commercial Bulletin for Dec. 30, 1873. Jan. 3, 10, 17, 1874.

NORTHEND, W. D. British and American Register for 1774. 1 vol. 16mo.

PERKINS, HENRY W. Report of the Commissioners on the Great Fire in Boston. 1 vol. 8vo. Boston. 1873.

U. S. PATENT OFFICE. Official Gazette for Dec. 23, 30, 1873.

By Exchange.

AMERICAN ACADEMY OF ARTS AND SCIENCES. Proceedings of the. Vol. iii. May, 1868–May, 1873. Boston, 1873.

BELFAST NATURALIST'S FIELD CLUB. Tenth Annual Report of the, 1872–1873.

CROSSE ET FISCHER. Journal de Conchyliologie, tome xiii. Oct. 1873.

INSTITUT HISTORIQUE IN PARIS. L' Investigateur 39 Année. Mai–Juin. 1873.

L' INSTITUT ROYAL GRAND-DUCHAL DE LUXEMBOURG. Publications, tome xiii. 1873. 8vo.

NATURWISSENSCHAFTLICHEN GESELLSCHAFT ZU CHEMNITZ. Bericht, 1871–1872.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. The Historical and Genealogical Register, Jan.– Mch., 1874.

SOCIÉTÉ D' ACCLIMATION IN PARIS. Bulletin Mensuel, tome x, 2me séries, Nos. 6, 7, 8, 9, 1873.

SOCIÉTÉ D' ANTHROPOLOGIE IN PARIS. Bulletins, tomes vii, viii, 1872–73. 2 vols. 8vo.

SOCIÉTÉ NATIONALE DES SCIENCES NATURELLES IN CHERBOURG. Memoires, tome vii, 1873. 1 vol. 8vo. Catalogue de la Bibliothèque. Dec. 31, 1872.

PUBLISHERS. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwick's Science Gossip. Haverhill Gazette. Historical Magazine. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Post. Salem Observer. Silliman's Journal. The Commonwealth.

Adelaide M. Putnam, S. Elizabeth Hunt and Mary E. West, all of Salem, were duly elected resident members.

The Secretary, Mr. John Robinson, exhibited two finely grown plants from Mr. David M. Balch, the *Amaryllis venusta*, having ten flowers on three flower stalks from one bulb; and the *Imantophyllum miniatum* twelve flowers on one stalk; also a forced *Trillium grandiflorum* which had flowered twice from each bulb.

The paper of the evening was communicated by Hon. James Kimball, consisting of notes from the diary of his grandfather, William Russell, prior to and chiefly during the time he was confined in Mill Prison, England, in the war of the Revolution. The extracts read were very interesting, and embodied a vast amount of information relative to the character and condition of the prison, the treatment of the prisoners, when and where captured, their places of residence, previous occupation, etc.

After the reading, remarks were made by several persons, a vote of thanks passed, and a copy was requested for the publications of the Institute.

The paper is a valuable contribution to the history of the period of the revolution, and will be printed in the twelfth volume of the "Historical Collections of the Institute."

Adjourned.

Regular Meeting, Monday, March 16, 1874.

Meeting this evening at 7.30 o'clock. The President in the chair. Records read.

The Secretary announced the following correspondence:—

From Stephen M. Allen, Boston, March 3; Edwin Bicknell, Cambridge, March 2; E. P. Boon, New York, March 5; Nehemiah Cleaveland, Westport, Conn., March 9; A. C. Goodell, Jr., March 5; Daniel A. Rogers, Chicago, Ill., March 7; J. Sabin & Sons, New York, March; Leeds Philosophical and Literary Society, Feb. 26.

The Librarian reported the following additions:—

By Donation.

Baker, Dr. H. B., of Lansing, Mich. First, Second, Third and Fourth Registration Report of Michigan, 1867–8, 1869, 1870. 3 vols. 12mo.

Cross, H. J. Genealogy of the Wells Family, of Wells, Me. Milwaukee, 1874.

Cutter, Abram E., of Charlestown, Mass. Annual Report of the School Committee for 1873. Address of Jona. Stone to the City Council, Jan. 6, 1873. Farewell Sermon by Charles E. Grinnell, Dec. 28, 1873.

Forbes, R. B. Lifeboats, Projectiles, and other Means for Saving Life. By donor. 1872.

George, W. S., of Lansing, Mich. Directory of Lansing for 1873. 1 vol. 8vo. Directory of Saginaw Valley for 1874. 1 vol. 8vo. Journal of the Proceedings of the Convention of Delegates of the State of Michigan. Sept. 26, 1836.

Green, S. A., of Boston. Miscellaneous pamphlets, 28.

Kimball, James. Journal and Documents of the Valuation Committee, 1860. 1 vol. 8vo. Annual Report of the Board of State Charities, 1865. 1 vol. 8vo. Agriculture of Massachusetts, 1856. 1 vol. 8vo. Miscellaneous pamphlets, 7.

Mack, Esther C. Dwight's Journal of Music. 4to. 20 volumes in 10. Boston.

Osgood, Alfred, of Newburyport, Mass. Annual Report of the School Committee of Newburyport for 1873. Eighteenth Annual Report of the Directors of the Public Library of Newburyport. 1873. The Mayor's Address and the Treasurer's Annual Report, etc. 1873.

Putnam, Geo. G. American Almanac for 1830, 1832. 2 vols. 12mo.

Smith, Nath'l, Pembroke. Annual Report of the School Committee of the Town of Pembroke for 1873–74.

Stone, E. M., of Providence, R. I. Thirty-Second Annual Report of the Ministry at Large. Feb. 1, 1874.

Stone, Mary O. The Nation. 52 nos.

Sutton, W., Peabody. Records of the State of Rhode Island and Providence Plantations in New England, 1784–1792. 1 vol. 8vo.

Tuthill, F. H., Kalamazoo, Mich. History and Directory of Kalamazoo for 1869–70. 2 vols. 8vo.

U. S. NAVAL OBSERVATORY OF WASHINGTON, D. C. Astronomical and Meteorological Observations for 1871. 1 vol. 4to. Washington, 1873.

U. S. PATENT OFFICE of Washington, D. C. Official Gazette for Feb. 17, 1874.

WHITING, R. S., Boston. Memoir of Rev. Samuel Whiting, D.D. By W. G. Whiting. 1 vol. 8vo. Boston, 1873.

By Exchange.

AMERICAN PHILOSOPHICAL SOCIETY OF PHILADELPHIA. Proceedings of, June-Dec., 1873. No. 91. 8vo pamph.

PUBLISHERS. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Observer. Salem City Post. Silliman's Journal.

William W. Kellett of Peabody was duly elected a resident member.

Agreeably to the suggestion offered at the meeting on Feb. 27th, the evening was devoted to the discussion of subjects relating to art.

Mr. GEORGE M. WHITE gave a description of the various modes of engraving—an abstract of his remarks follows:—

COPPER-PLATE ENGRAVING.

THE art of engraving on copper and taking impressions from the engraved plates, is ascribed to a native of Florence, named Finiguerra, who flourished in the fifteenth century. He was a successful workman in an art then largely practised, namely, the engraving of church ornaments, vases, sword-blades, and other articles, and filling the engraved lines with a black composition of silver and lead. This was called working *in niello*, and had a very fine effect. One day Finiguerra wished to try the effect of an engraving he had been working upon, and for that purpose cast some melted sulphur into the hollows of the lines; on removing the sulphur he noticed that some dust and charcoal which had gathered in the engraved portion of the plate gave an impression of his design. After this he tried the effect of moistened paper pressed down on the engraving with a roller, and met with complete success. For some time he used the discovery to make copies of his designs. Finally other engravers and goldsmiths penetrated his secret, and soon the important discovery was widely diffused.

Copper and steel-plate engraving, as now practised, is subdivided into five branches, viz., line, stipple, mezzotint, aquatint and etching. Pure line engraving is one of the most difficult and tedious methods used for the purpose of illustration, and has given place, of late years, to more expeditious and less costly modes of work. A plate of copper or steel, the latter metal being preferred on account of its greater.durability, comes from the manufacturer ready for the engraver's use. The plates are prepared with a perfectly sound texture and even grain throughout, and the surface is perfectly smooth and very highly polished. For copper plates the price asked is about twenty-five cents per square inch, so that the first cost of the plate alone is sometimes a considerable amount. The engraver, having received the plate ready for use, must transfer to it a careful outline of the picture he proposes to engrave. To this end, the plate is first heated until it attains a sufficient uniform heat to melt white wax, a piece of which is rubbed over it, and allowed to spread in a thin layer till the whole surface is equally covered, after which the plate is left in a horizontal position, until the wax is cold. In the interval a careful tracing of the original design is made with black lead pencil upon thin tracing paper, and this is afterwards spread over the surface of the waxed plate, with the lead lines in contact with it, and of course reversed. The tracing being secured in this position, heavy pressure is applied, which transfers the lead lines from the paper to the wax. The engraver now takes a fine steel point, and (the tracing paper being removed) goes over the subject lightly, so as to penetrate the wax, and touch the steel-plate. By this means a perfect and delicate outline is drawn upon the plate, and, the wax being melted off, the subject is ready to be proceeded with, and finished. The instrument used in line engraving is called the *graver*, or *burin*, and is made of highly tempered steel, ending in an unequal sized pyramidal point. This instrument is held in the hand at a small inclination to the plane of the copper, and is pushed forward in the direction required to cut the lines on the plate. As the *burin* cuts the line it raises on each side a ridge of metal, technically known as the *bur*. To remove this, the engraver has recourse to the *scraper*, a triangular instrument of steel about six inches long, and having the angles ground down to sharp cutting edges. After removing the *bur* he uses a third instrument, also of steel, called the *burnisher*, to soften down the lines, and remove accidental scratches from the plate. There are few mechanical inventions used in line engraving, for the engraver depends upon the *burin* only for his effects, and by the different depths, lengths, or widths of line he produces all the various lights or shades of the original picture. There are inventions, however, to lighten the labor of the line engraver, and where a series of parallel lines are wanted, in architectural subjects, or in skies, a ruling machine is substituted. Those engravers who work for reputation seldom employ these artificial helps, and the older engravers never used them, for they were not then invented.

Next to line engraving comes engraving in *stipple*, which is nearly as difficult as the first named art. It is used in representing the flesh in portraits, for delicate transitions of light and shade, and for drapery, or in textile fabrics, such as silk, satin, or laces. In stipple engraving the effect is produced by the cutting of small dots, the shadows being made by increasing the number and size of the dots. This process is often combined with line engraving. Sometimes a small mallet is used to strike lightly upon the plate, and beat down the impressions to the right depth, producing the same effect as the use of the *burnisher* in line engraving.

Mezzotint engraving is a more recent invention than line, and the process is entirely different. A mezzotint plate prepared for a design presents a surface entirely roughened by minute indentations in the metal, and by a *bur* raised by the tool with which they are made. To lay a mezzotint ground the engraver uses an instrument called the *cradle*, a piece of properly tempered steel, with a spherical face cut into sharp points, and fitted to a handle, by which the pointed face is worked over the surface of the plate until the needed *bur* is obtained. A proof taken from the plate in this state would present an intensely black tint; if the slightest portion of the ground be scraped off it would be marked in the proof by a lighter tint, a pure white only being obtained by entirely removing the ground and burnishing the metal. The work of the artist, therefore, consists in availing himself of the nature of the ground to scrape out his picture from black to white, which is effected by lancet-shaped scrapers and burnishers of various forms and sizes. To prevent accidental encroachment upon portions of the ground desired to be kept black, the engraver touches such parts with a brush filled with asphaltum or india ink, removing it again when the work is sufficiently advanced to allow of it.

A plate for *aquatint* engraving is prepared by pouring a solution of Burgundy pitch, or mastic made in alcohol, over the plate; the solution, when evaporated, leaves a granulated ground. A proof from a plate so prepared and subjected to the action of acid, would present under a lens the appearance of an elaborate network of lines. As the plate may have been more or less subjected to the action of the acid, these lines will be more or less deep and broad, and producing tints, in printing, from the faintest stain or wash of india ink, to black. To arrest the action of the acid at the proper moment, so as to secure certain gradations of tint by means of "stopping out" with an acid resisting varnish, and at the same time to give these tints their proper form, comprises the motive and effective application of aquatint.

Etching is peculiarly a painter's art, requiring less technical knowledge and more artistic capacity in the practioner than any other branch of engraving. A plate is prepared for etching by rubbing the burnished surface with willow charcoal and water. The charcoal leaves an infinite number of fine lines or scratches in the plate, which show the same appearance in the proof as a delicate wash of india ink, and serve to tone down the obtrusive whiteness of the paper. After using charcoal the plate is heated to a temperature sufficient to melt a composition of white wax, Burgundy pitch and asphaltum, technically called the etching ground, which is rubbed over the plate in a thin, even coat and allowed to harden. The ground is then smoked to a dull, deep black, over the flame of a wax taper. The artist now prepares his design on thin paper, tracing the outline with soft red chalk; he then places the design face to the smoked surface of the plate, and again traces the outline of the subject with a sharp point of ivory or wood, and on removing the paper the chalk lines are transferred to the wax ground, reversed. An instrument is now used called the etching needle, to score the lines through the wax and lay bare the surface of the copper. The pressure used is just sufficient to remove the etching ground and slightly scratch the surface of the metal beneath. The artist works stroke by stroke, much the same as when drawing with a pen, only in this case every mark shows white on a black ground, just the reverse of pen drawing, and the deepest shades show as patches of white. After the drawing is completed the back of the plate is covered with a varnish and immersed in a bath composed of equal parts of nitric acid and water, the copper is attacked in those parts laid bare by the etching needle, and after a sufficient depth of line is obtained for the lightest parts, those portions are stopped out with varnish, and the plate is again bitten until the darkest shades are obtained.

To print well from copper or steel plates requires great care. The press used consists of two great rollers, between which travels a solid flat plate, called the bed, on which rests the plate. The copper-plate is first heated until it is as hot as the hand can bear, then it is inked all over with a *dabber* and some force is used to drive the ink well into the lines; next the whole of the superfluous ink is removed with a coarse muslin rag, and the palm of the hand, and the copper margin of the plate cleansed very carefully with whitening; having marked the place of the plate on a sheet of zinc, the printer lays it on the zinc in its measured place, and over it spreads a sheet of damp paper; over this he places a number of thicknesses of cloth, and the whole is forced between the rollers of the press; the pressure forces the paper into the lines of the engraving, and, removing the ink, produces the picture. Usually the first hundred impressions of a choice engraving are printed upon india paper, and are sometimes signed with the name of the artist; in this case they are called "autograph proofs," and are much more costly than an ordinary impression. After the artist proofs are printed it is customary to cut the artist's name in the right hand lower corner of the plate, while the engraver's name occupies the left hand portion, bringing them, of course, in just the opposite position in the printed proof; then another series of proofs are struck off, and called "proofs before the letter." Finally the title of the plate is engraved, and then the ordinary series of the plate is printed.

Mr. **James Kimball** communicated a paper on the "Journal of Rev. Daniel Shute, D.D., chaplain in the expedition to Canada in 1758."

Referred to the committee on publications.

Vice President F. W. **Putnam** spoke of the Agassiz Memorial Fund, and urged the necessity of aiding, even if in a small way, the promotion of its objects.

The subject was referred to the curators of the Department of Natural History.

Vice President **Putnam** presented the following paper:

NOTES ON THE MAMMALS OF PORTIONS OF KANSAS, COLORADO, WYOMING AND UTAH.

BY J. A. ALLEN.

The following incomplete lists of the mammals of four quite widely separated localities in the Middle Province of North America are based on observations made by the writer while on a recent collecting tour to the Great Plains and the Rocky Mountains, for the Cambridge Museum of Comparative Zoology. Meeting everywhere with intelligent hunters, some of whom had spent many years in the vicinity of the localities I visited, I was able to obtain from them much valuable information in respect to the occurrence and relative abundance of the larger species, testing of course the accuracy of their accounts by the independent observations and reports of different observers, and by my own experience and general knowledge of the subject. Respecting some of the smaller rodents, and the insectivores generally, I could obtain no satisfactory information, and they are consequently omitted from the lists.

Every naturalist is of course aware of the difficulties that one meets with in seeking to learn something of the mammalian fauna of a locality, and how inadequate a few weeks' reconnoissance is for its satisfactory exploration. Owing to the nocturnal habits of some species and the reclusiveness of others, only a comparatively small proportion of the whole are readily observed or obtained, patience and strategy and much time being requisite for the discovery and capture of the others. While a few weeks of diligent collecting may be sufficient to afford one a tolerable idea of the character and variety of the bird life occurring at a particular season at a given locality, many months are necessary to give one an equal familiarity with its mammalian life. On the other hand, one can learn at second hand much more respecting mammals than birds, the species of the former being so much fewer and in the main so diverse with each other, but more especially because all the larger mammals are objects of special interest to the hunter and trapper, either for their furs, their flesh, or as enemies, and whose pursuit is attractive and meritorious in proportion to its dangers and difficulties. Hence not only is the travelling naturalist compelled to consult those skilled in woodcraft for much information he has not time himself otherwise to obtain, but he can do so with a certainty of results attainable in respect to scarcely any other class of animals.

The collection of mammals obtained on this expedition contains much valuable material for special investigation, including, as it does, large series of skeletons of nearly all the ruminants and of several of the rodents and carnivores. As the results obtained by the examination of this and other collections of the mammals of the West are reserved for a series of special papers already in preparation (including monographic revisions of the families *Leporidæ* and *Sciuridæ*), it has not been deemed advisable to make the following lists in any degree revisionary, the nomenclature adopted being essentially that of the author's previous papers.

PART I.

On the Mammals of Middle and Western Kansas.

The observations which serve as the basis of the following list were made chiefly in the vicinity of Fort Hays, Kansas, in the summer of 1871, supplemented, however, by others made during two weeks spent in the field in northwestern Kansas during the following winter. All the larger and more common species are probably duly chronicled, while not a few of the rarer or more obscure species escaped notice, as I am unable to include in the list a single insectivore. The general character of the locality has been already indicated.*

FELIDÆ.

1. **Lynx rufus.** "Wild Cat." Bay Lynx. Rather frequent. Occasionally met with on the prairies remote from timber.

CANIDÆ.

2. **Canis lupus.** Gray Wolf. "Buffalo Wolf." Formerly very abundant, but during the last few years their numbers have greatly diminished, thousands having been killed for their skins every winter by means of strychnine. Comparatively few now remain.

3. **Canis latrans.** Prairie Wolf. "Coyote." Still quite common, but far less so than they were a few years ago. While their dismal cries are still familiar sounds on the plains of the western part of the state, especially in winter, hunters with their destructive poisons have reduced their numbers till comparatively few remain.

4. **Vulpes velox.** Kit Fox. "Swift." These graceful little animals are still more or less abundant.

BASSARIDÆ.

5. **Bassaris astuta.** Texas Civet Cat. Of occasional occurrence. Although I did not meet with it, an animal was described to me by different persons that so accurately agrees with the Texas civet cat that I have no doubt of its being this species. It is apparently rather rare, however, as none of my informants had seen more than two or three individuals in the region under consideration. The northern boundary of Kansas probably forms its ordinary northern limit of distribution on the plains.

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*See Bull. Mus. Com. Zool., vol. iii, pp. 122, 123. July, 1872.

MUSTELIDÆ.

6. Mephitis mephitica. Common Skunk. Abundant. One of the most common of the smaller mammalia. The few specimens I had an opportunity of examining presented the usual wide differences of color seen in those from other parts of the country.

7. Lutra Canadensis. American Otter. Occasional along the streams.

8. Taxidea Americana. Badger. Not frequent.

Other species of this family that probably occur here are *Putorius ermineus*, *P. pusillus*, *P. lutreolus* and *Mephitis bicolor.*

URSIDÆ.

9. Ursus arctos, var. **Americanus.** Black Bear. Said to be more or less common along the streams. We observed its tracks in June along the Saline.

PROCYONIDÆ.

10. Procyon lotor. Raccoon. Common along the streams, where we frequently observed its tracks.

BOVIDÆ.

11. Bison Americanus. American Bison. "Buffalo." Abundant.

The great "buffalo country" of the United States is now mainly restricted to Western Kansas and Eastern Colorado, between the Arkansas and Platte Rivers,—a region extending about two hundred miles in a north and south direction and nearly three hundred miles in an easterly and westerly direction, over much of which territory they still range in countless hordes. They are, however, partially migratory, moving eastward in summer and westward in winter. In the northern part of the state their summer range, in 1871, extended eastward from the western boundary of the state to the vicinity of Fort Harker. In winter their eastern limit scarcely extended east of Ellis, on the Kansas Pacific Railway, while they ranged westward into Eastern Colorado. These movements of the buffalo are evidently influenced by the climate, the prairies of Kansas west of Ellis being rarely long covered by snow, while to the eastward of this point the snow is much more constant, and the country hence much less favorable for the existence of the buffalo there in winter than it is more to the westward. Every year, however, their range is becoming more circumscribed, owing to the rapid reduction of their numbers by hunters, and, in consequence also of constant persecution, their movements are much more uncertain than formerly. Although the number of buffalo to be met with in this portion of Kansas is still almost beyond conception, the country sometimes seeming alive with them as far as the eye can reach, their diminution is rapid, and at the present rate of destruction a few years will suffice to exterminate them wholly. Since the completion of the Kansas Pacific Railway, some four years since, this line of communication with the east has not only opened up an unlimited demand for the products of the buffalo, but has afforded to the hunters a most convenient base from which to carry on their operations. The result is already apparent in the diminished and demoralized state of the herds in northwestern Kansas, which already so much affects the success of the hunters that they have of late in great part abandoned this portion of the country for the more promising field newly opened up to them along the line of the Atchison, Topeka and Santa Fé Railroad.

Aside from the tens of thousands killed in winter for shipment in a frozen state to the eastern markets, other thousands are killed merely for their hides, which scarcely repay the labor of gathering, their carcasses being left to decay on the ground where they are killed. Hundreds, and probably thousands, are also killed in mere wantonness, or to gratify the ambition of eastern sportsmen and tourists. The buffalos are thus perpetually harassed, and driven from place to place throughout the year. All ages are alike destroyed, those too old to be of any value for their flesh being slaughtered for their hides, and the younger animals for their "saddles." The younger animals, and particularly the young cows, are especially sought for their meat. The latter being mostly with young, two animals are thus destroyed instead of one, which, with the destruction of yearlings and two- and three-year-olds, greatly checks the natural increase of the herds, and greatly hastens their extermination. Unless vigorous government interference shall put a check upon this wholesale, shortsighted slaughter, much of which is really needless, the buffalo will soon be known here only as a thing of the past, as it now is in the vast region east of the Mississippi, where this animal once lived in countless numbers.

Respecting the whole number now annually killed in Kansas, it is almost impossible to obtain reliable statistics. Through the kindness of Mr. W. T. Bowen, General Superintendent of the Kansas Pacific Railway, I have learned that the meat and hides shipped to eastern cities over this road during the year 1871 represented about twenty thousand individuals. In the fall of 1872 forty-three thousand hides are reported to have been shipped from Fort Dodge alone, besides about a million and a half pounds of meat. The grand total killed in the season of 1872–3, in the immediate vicinity of Fort Dodge, is stated to be not less than *one hundred thousand!*

ANTILOCAPRIDÆ.

12. Antilocapra Americana. Pronghorn. "Antelope.' Common in summer as far east as the middle of the state, and formerly ranged much further eastward. Not observed in winter much to the eastward of the Colorado boundary, at this season they mostly abandoning this portion of the state for the milder portions of the country to the southward and westward. We observed them in June about Fort Hays in small parties of six to a dozen. They were, however, exceedingly wary and difficult to approach. Fawns a few days old were frequently brought in to the Post during the first two weeks of June, but they usually soon died, even under the most careful treatment. The fawns, even when but a few days old, were often more wary and even fleeter than their dams, frequently taking flight first and leading the herd.

The fawns, when taken very young and without injury, are easily reared, and become thoroughly domesticated, making very graceful and interesting pets. The Indian method of capturing them by creeping up to them stealthily when they are asleep and throwing a blanket over them is the most successful, as they are then taken without experiencing an excessive shock of fright or bodily injury. When run down with horses, the common way of taking them, they generally die in three or four weeks, from the effects of the chase and the fright, not more than one in eight or ten, it is said, surviving.

Although tolerably frequent in northwestern Kansas in summer, they are far less numerous here than in eastern Colorado, or on the plains of southern Wyoming.

CERVIDÆ.

13. Cervus Canadensis. Elk. More or less common near the streams, especially on Paradise Creek, and occurs as far east at least as Fort Harker.

14. Cervus macrotis. Mule Deer. "Blacktail." More or less common along the wooded portions of the streams, especially on the Smoky and the Paradise.

VESPERTILIONIDÆ.

Bats were frequently observed flying about at Fort Hays, but as none were obtained the species were not determined.

MURIDÆ.

15. Mus musculus. Common Mouse. Common in the houses at Hays City.

16. **Mus decumanus.** Brown Rat. Abundant, and a great pest about the government storehouses at Fort Hays.

17. **Hesperomys leucopus,** var. **sonoriensis** (Coues MS). Whitefooted Mouse. A single specimen was picked up dead in the yard at our quarters at Fort Hays. Probably more or less common. (Also obtained at Cheyenne.)

18. **Neotoma cinerea.** Wood Rat. Apparently common along the timbered portions of the streams. A complete skeleton was found on the banks of Big Creek, near Fort Hays.

19. **Fiber zibethicus.** Muskrat. Occasional along the streams.

GEOMYIDÆ.

20. **Geomys?** A gopher (some species of *Geomys* or *Thomomys*) was more or less common in the moist bottom lands near the streams, but none were captured.

CASTORIDÆ.

21. **Castor fiber.** Beaver. Still quite frequent along the timbered portions of the streams.

SCIURIDÆ.

22. **Sciurus cinereus,** var. **Ludovicianus.** Western Fox Squirrel. Said to be common on some of the wooded streams, but we did not meet with it.

23. **Spermophilus tridecem-lineatus.** Striped Prairie Squirrel. More or less common generally, but most numerous near the streams and damp hollows.

24. **Cynomys Ludovicianus.** Prairie Dog. Exceedingly abundant, their villages frequently covering areas of several square miles in extent, and embracing hundreds of families. Occasionally a few pairs of burrowing owls (*Speotyto cunicularia*, var. *hypogœa*) inhabited the "dog-towns." Rattlesnakes are occasional, and in one or two instances were seen in holes about the mouths of which were fresh tracks of the dogs. The theory that these three animals, the dogs, the snakes and the owls, inhabit the same hole at the same time, receives little credit among people thoroughly conversant with their habits, and the idea that they live harmoniously together as "happy families" finds still fewer supporters. The owls appear to occupy only the abandoned holes, and probably never habitually live in the same holes with the dogs. The owls are far from abundant, as often several large villages may be passed in a day's ride without meeting with a single owl. The owls may, to some extent, prey upon the

young dogs, but the stomachs of those dissected were almost invariably filled with grasshoppers, and the débris found about their holes indicated that these and other insects, with a large kind of crawfish, constitute at this season of the year their chief food. That the rattlesnakes prey upon the dogs is sufficiently established by the frequent capture of the snakes with young dogs in their stomachs. I have myself taken three young dogs from the stomach of a single snake. The entrances to most of the holes in which the snakes were seen were worn smooth by the friction of the snake's body in passing in and out, they apparently appropriating certain holes which they occupy permanently; but they doubtless enter holes occupied by the dogs. When this occurs the dogs not only immediately abandon the holes, but are said to fill them up, and thus fasten the snake in. It certainly happens that the dogs do thus frequently abandon and solidly fill the entrances to their burrows, as I have myself observed, and I do not doubt that what the old "plainsmen" thus affirm is correct.

The dogs usually select a level tract for the site of their towns, and seem to a great extent to avoid the ridges and the more broken parts of the country. In regard to their habits, or voice, there is little or nothing to suggest the name of "dog," as of course there is nothing in their structure to imply such affinities as the name "Prairie Dog" might be supposed to indicate. They are simply large ground squirrels or marmots, and their voice is quite like the so-called barking of various kinds of *Sciurus*, varied at times with a shrill whistle, not unlike that of some of the true marmots. We found them generally exceedingly shy, retreating to their holes almost invariably long before the intruder gets within sure rifle range, whether on foot, mounted, or in a wagon. They behaved differently, however, on different days and at different localities, sometimes permitting a near approach. They usually scamper to their holes at the first approach of danger, but as soon as they reach them they seem conscious of safety. From the entrance of their burrows they will salute the object of their alarm, at times almost incessantly, with their impertinent, squirrel-like bark, either seated upright on their haunches, or stretched at full length across the opening. Their combined air of confidence and impudence is at such times often highly amusing; and, thus sure of a hasty retreat from danger, they will often allow a person to approach within a few yards of them, but if approached too closely suddenly drop into their holes, from which their subdued, twittering, half-whistling bark can be faintly heard after they have disappeared. Being excessively tenacious of life, they are difficult to procure, because even if mortally wounded they almost invariably fall into their holes. If shot through the head, or through the heart, unless knocked backwards away from their holes (which not often happens) they are then rarely obtainable, and even when thus knocked over by the force of the missile, they will often wriggle into their holes before they can be secured. Their holes usually descending nearly vertically for several feet, they commonly slip down out of reach, though killed instantly. Occasionally, however, the holes slope sufficiently to allow them to lodge a few feet from the entrance, when they may be reached by means of a common gun-rod, and drawn out by twisting the wormer of the rod into their tough hides. In this way Mr. Bennett and myself one day secured seven in the space of a couple of hours at Fort Hays, though we had been many times assured it would be impossible to get them by shooting them. But this was unusual success, as ordinarily not more than one in six of those killed could be secured.

The prairie dogs are easily tamed, and make amusing, though at times rather mischievous, pets. A variety of food seems to please their palates, and whenever they can get at some delicacy in the pantry or storehouse they are sure to carry away large quantities. They also have a propensity to carry away articles for which they have no use. The mode of capturing them is usually to "drown them out" by filling their holes with water. This method is always laborious, requiring often many barrels of water, which has to be transported with teams, and is not always successful, owing to the extensive ramifications or intercommunication of their burrows. Occasionally advantage is taken of temporary pools of water left standing after heavy rains, the water being conducted into the holes by means of trenches. A more effective and ingenious way, however, has of late been adopted. This consists in placing a barrel, from which both heads have been removed, over the entrance of an inhabited burrow, and partially filling it with straw. When the animal comes out he burrows up through the straw, which he unwittingly presses so compactly behind him that he cannot descend through it, and thus remains a prisoner in the barrel above the straw.

A gentleman whom we met at Cheyenne, by carefully studying the habits of the prairie-dog, had discovered a method of capturing these animals alive by the use of water with comparatively little trouble. Their burrows usually have two entrances, one of which descends almost vertically and the other by a considerable slope. Often a single bucket of water poured suddenly into the vertical end of the hole, causes the animal to rush out in great surprise at the other entrance, where it is captured in a bag held over the hole. When the railroad first reached Cheyenne, and for some time after, these animals were in great demand by the passengers as objects of curiosity, and sold readily for ten dollars a pair. The prairie dogs being very numerous on the plains about Cheyenne, the gentleman in question soon realized quite a large sum from the sale of these little animals, which he captured in the manner above described.

Many of the burrows of prairie dogs have a raised, funnel-shaped entrance, varying in height from a few inches to a foot or more. These have been called their "forts," and the dog sitting in the entrance defiantly barking has been compared to a sentinel on guard. The object, however, of these raised entrances is sufficiently obvious, these embankments being formed to keep out the water, which in violent rains soon covers the whole surface of the ground. Often the holes are situated in very slight depressions, and would hence be filled by the drainage into them, were they not thus protected; and under these circumstances the embankments are generally higher than when the holes are in this respect more favorably situated, They are formed of earth scraped up from the surface outside the hole, and are symmetrical in shape, very hard and smooth. These embankments, or "forts," are seen in greatest perfection when the site of the "village" is on low or very flat land; they are always kept in excellent repair as long as the burrows are inhabited. In the excavation of their holes the earth is all disposed of without bringing it to the surface.

In winter, during fine weather, the prairie dog villages present as active and populous an appearance as in summer, the dogs only retiring for a few days at a time during the continuance of the severest weather.

HYSTRICIDÆ.

25. Erethizon dorsatus, var. **epixanthus.** Porcupine. A few are reported still to occur on the Paradise. Formerly more or less frequent on all the wooded streams.

LEPORIDÆ.

26. Lepus sylvaticus. Gray Rabbit. Abundant, not only near the streams but quite distant from timber. Many were seen about the military post at Fort Hays, making their homes in the piles of wood in the woodyard at the post.

27. Lepus campestris. Prairie Hare. A few seen in summer on the plains north of Fort Hays, and in winter from the western border of the state as far east as Bunker Hill Station. They were quite often met with in December and January near the northwestern border of the state. About half of those obtained during these months still retained their summer color.

28. Lepus callotis. Jackass Rabbit. We obtained this species at Cheyenne, and I have good authority for its occurrence in Eastern Colorado and the western part of Kansas.

[*To be continued.*]

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., APRIL, 1874. No. 4.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, MARCH 16, 1874.

NOTES ON THE MAMMALS OF PORTIONS OF KANSAS, COLORADO, WYOMING AND UTAH.—BY J. A. ALLEN.

[*Continued.*]

PART II.

On the Mammals of Park County, Colorado.

THE following notes are based on observations and inquiries made during four weeks spent in and about South Park, Colorado, in the summer of 1871. They refer not only to the Park itself, but also embrace a part of the Snowy Range. A week was spent in the vicinity of Montgomery, near the timber line, from which point excursions were made to the snow region. A few facts were also obtained from miners and hunters.

FELIDÆ.

1. **Felis concolor.** Panther. Not uncommon. Well known under the name of Mountain Lion. Its cry was once heard near our camp at Montgomery.

2. **Lynx Canadensis.** Represented as common. Saw skins of this species in the possession of hunters, taken in the vicinity of Mount Lincoln.

3. **Lynx rufus.** "Wild Cat." Not uncommon.

CANIDÆ.

4. Canis lupus. Gray Wolf. Formerly abundant, but now comparatively scarce.

5. Canis latrans. Prairie Wolf. Formerly exceedingly numerous, but now greatly reduced in numbers, though still more or less troublesome.

6. Vulpes vulgaris, var. **fulvus.** Common Fox. Common. The color is generally grayer than in the eastern form, and the "black" and "cross" varieties are more frequent. In a series of some thirty-five or forty skins, taken in the winter at Montgomery, which I had an opportunity of examining, none were as brightly colored as the red fox of the Eastern States. One was entirely black, and nearly half of the others were more or less well-marked "cross" foxes, some of them typically so, but they graded almost insensibly into the ordinary type. The *V. macrourus* seems to represent only a common phase of the "cross" fox, a type so much more common in the western and elevated parts of the continent than at the eastward.

MUSTELIDÆ.

7. Mustela martes. Marten. Common.

8. Mustela Pennanti. Fisher. Said to be more or less common.

9. Putorius ermineus. Ermine Weasel. Common.

10. Putorius lutreolus, var. **vison.** Mink. Common along the streams up to about ten thousand feet, above which I could not obtain evidence of its occurrence.

11. Gulo luscus. Wolverene. Said to be not uncommon. Saw the skin of one taken near Montgomery.

12. Mephitis mephitica. Common Skunk. Common, ranging to above timber line.

13. Taxidea Americana. Badger. Common in South Park.

URSIDÆ.

14. Ursus arctos, var. Bear. Common. Both the black and cinnamon varieties occur in about equal numbers. The cinnamon variety is represented as averaging the larger, and as being the more dangerous to encounter. Both vary greatly in color and size, and appear evidently to intergrade. The cinnamon is often quite gray, when it often passes for the grizzly, though not generally regarded as the "true" grizzly.

BOVIDÆ.

15. Bison Americanus. American Bison. A few still remain in the southern portion of South Park, chiefly near Buffalo Springs. A small band came up the valley of the Platte from the eastward into the Park in June, 1871. They moved rapidly, and a calf accompanying the herd becoming fatigued and lagging behind was captured. This I saw in the following August, at a ranch fifteen miles below Fairplay. It was apparently some ten or twelve weeks old, and had already begun to turn dark colored. As recently as 1862 the buffalo are said to have been abundant throughout South Park, where their skulls and other bones are still everywhere frequently met with, as well as thence eastward throughout the smaller parks and mountain valleys. It seems also to have wandered in summer to above timber line on the Snowy Range, to feed on the grassy slopes that occur above the limit of trees. We found its bleached skulls in the Valley of the Platte, up to the extremest sources of the stream, and Mr. Bennett met with them on Mt. Lincoln, far above timber line.

The buffalo of the Parks and mountain valleys is said to differ from the buffalo of the plains, and is hence generally distinguished as the "Bison," or "Mountain Bison." Although this opinion is widely entertained, the reports respecting the differences that distinguish these two varieties are extremely varied and conflicting. Persons claiming familiarity with both hold opposite opinions as to their diversity, some failing to perceive any essential differences, while others maintain that they differ so widely that they must be different species. I found, however, that those whose experience with both seemed to render them the most competent to judge were those who placed the lowest estimate on their differences, while those who magnified them most belonged to a class more or less prone to exaggeration in matters of even trivial importance. The alleged differences varied with almost every individual whose opinion in the matter was consulted. The mountain buffalo is, however, generally regarded as smaller than the buffalo of the plains, slenderer behind, but provided with a larger hump, and with darker, finer and more abundant wool. I found, however, that the skulls met with in South Park, and in the valley of the South Platte above Fairplay, averaged larger, by actual measurement, than those of the plains, with stouter and considerably longer and more spreading horns. The "mountain bison" is said never to mix with the "buffalo" of the plains, the former being confined exclusively to the mountains, and the latter to the plains. One of my informants assured me that the mountain bison occurs in New Mexico, and that the Mexicans and Indians recognize it as different from the buffalo of the plains, with which they are also familiar, and that they call it by a different name.

16. Ovis montana. Rocky Mountain Sheep. Occasional, but found chiefly on or near the Snowy Range, retiring in summer to the most inaccessible parts of the mountains. Fresh "signs" were noticed by Mr. Bennett on one of the spurs of Mt. Lincoln, while here and there a weathered skull attested their former greater frequency.

ANTILOCAPRIDÆ.

17. Antilocapra Americana. Pronghorn. "Antelope." Not uncommon in South Park.

CERVIDÆ.

18. Cervus Canadensis. Elk. Becoming rare; formerly common. In summer keeps near the upper limit of timber, descending occasionally into the valleys in winter.

19. Cervus macrotis. Mule Deer. More or less common, but in summer is said to be most frequent near the timber line, though occurring more or less generally throughout the mountains.

VESPERTILIONIDÆ.

20. Lasiurus? A small bat was a few times seen flying about camp soon after sunset, which was probably *Lasiurus Noveboracensis.*

MURIDÆ.

21. Neotoma cinereus. Wood Rat. Common. It freely enters houses and storerooms in quest of food, and is sometimes extremely troublesome.

22. Hesperomys leucopus, var. **sonoriensis** (Coues Ms.). White-footed Mouse. A species of *Hesperomys*, probably *H. leucopus*, var. *sonoriensis* is quite common.

23. Arvicola——? Field Mouse. An undetermined species of short-tailed field mouse, undoubtedly an *Arvicola*, is said to be more or less frequent.

24. Fiber zibethicus. Muskrat. More or less common at favorable localities.

GEOMYIDÆ.

25. Thomomys rufescens. Fort Union Gopher. Common almost everywhere, in moderately dry soil. Observed their burrows on the Snowy Range, nearly up to the limit of vegetation.

CASTORIDÆ.

26. Castor fiber. Beaver. Quite common on the South Platte and its tributaries. Saw their last dam on the Platte a few miles below Montgomery, above which point they are said not to occur.

SCIURIDÆ.

27. Sciurus Hudsonius, var. **Fremonti.** Fremont's Squirrel. Not abundant.

28. Tamias lateralis. Say's Striped Squirrel. Common. Ranges up to timber line.

29. Tamias quadrivittatus. Missouri Striped Squirrel. Abundant from about seven thousand feet up to the extreme limit of vegetation.

30. Spermophilus tridecem-lineatus. Striped Prairie Squirrel. Everywhere common, especially in South Park.

31. Cynomys Gunnisoni. Gunnison's Prairie Dog. Common in South Park, and thence eastward to the plains, where it is immediately replaced by *Cynomys Ludovicianus.*

32. Arctomys flaviventer. Yellow-footed Marmot. Abundant about Montgomery, ranging from the valley of the Platte up to the limit of vegetation. Most numerous at and above the timber-line, where often quite a number were visible at the same moment, basking on the rocks. Specimens entirely black are of frequent occurrence. Their sharp call, in character somewhat between a clear whistle and a short, sharp bark, well entitle them to the name of "whistling marmot." They seem to be almost restricted to the alpine district, none being met with below ten thousand feet.

HYSTRICIDÆ.

33. Erethizon dorsatus, var. **epizanthus.** Porcupine. Common, ranging from the foot-hills upward to the timber line.

LAGOMYIDÆ.

34. Lagomys princeps. Little Chief Hare. "Cony." Very abundant on the Snowy Range about the sources of the Platte. Are first met with but a few hundred feet below the timber line, ranging thence upward to the limit of vegetation. Mr. Bennett observed them on the top of Mt. Lincoln, and we often found them above timber line, in places almost entirely destitute of vegetation. Their favorite haunts are taluses, and are seen almost exclusively among the bare loose rocks that cover so much of the higher slopes. They are very unsuspicious, allowing a near approach. When seated among the rocks, or when running about among them, they make known their presence by the frequent utterance of their feeble call note, which may sometimes be heard from a dozen individuals at once. They were often very abundant where there was scarcely any vegetation within a hundred yards. In other instances their warrens were met with in the upper edge of the timber, where grass and small plants were abundant, of which they had carried large quantities into the rocks, in some places filling almost every crevice for many yards around. As they crept slowly about over and among the loose stones, they looked like large, tailless rats. Their note is a feeble squeak, and very deceptive as to distances, seeming to be far away, when really but a few feet distant.

LEPORIDÆ.

35. Lepus campestris. Prairie Hare. Common in the parks.

36. Lepus sylvaticus, var. **artemisia.** Sage Rabbit. Common.

37. Lepus Bairdii. Another species, said to be white in winter and confined to the timber, is also mentioned as common; doubtless the *Lepus Bairdii*, the common alpine form of our *L. Americanus* of the east.

PART III.

On the Mammals of Carbon Co., Wyoming Territory.

The following list is based on observations made and information obtained during a residence of about two months in the vicinity of Percy, a station on the Union Pacific Railroad, about six miles north of the old Fort Halleck, in southwestern Wyoming. My constant intercourse with hunters of long experience in this section of the country enabled me to gather much information I could not otherwise have obtained without a long residence here. Specimens of nearly all the species mentioned below were either obtained by ourselves or purchased in a fresh state of the hunters. The area to which this list refers embraces a portion of the Medicine Bow range of mountains, Elk Mountain being one of the prominent landmarks of the locality, as well as the adjoining "sage plains" which form so prominent a feature of this section of the country.

FELIDÆ.

1. Felis concolor. Panther. "Mountain Lion." More or less common in the timber of the Medicine Bow Range, as it is also throughout the timbered portions of the Rocky Mountains.

2. Lynx Canadensis. Canada Lynx. Frequent in the mountains, and occasionally met with on the plains.

3. Lynx rufus. Bay Lynx. Not common.

CANIDÆ.

4. **Canis lupus.** Gray Wolf. The "Mountain Wolf" and "Timber Wolf" of the hunters. Abundant in the timber.

5. **Canis latrans.** Prairie Wolf. "Coyote." Abundant on the plains and prairies.

6. **Vulpes vulgaris**, var. **fulvus et macrourus.** Fox. Common.

MUSTELIDÆ.

7. **Mustela martes.** Marten. Not common.

8. **Putorius ermineus.** Ermine Weasel. Abundant.

9. **Putorius lutreolus**, var. **vison.** Mink. Common.

10. **Gulo luscus.** Wolverene. "Carcajou." Rather common, and reported to be quite numerous at particular localities.

11. **Mephitis mephitica.** Common Skunk. Abundant.

12. **Taxidea Americana.** Badger. Common.

The Fisher (*Mustela Pennanti*) does not appear to occur in this immediate region.

URSIDÆ.

13. **Ursus arctos**, var. Bear. The black, brown and cinnamon varieties are all frequent. The hunters not only recognize them as distinct and permanent varieties, but in addition to these, some of the more observant of them distinguish subvarieties, based on the shape of the head, the general form, size or color. Some of those with whom I conversed made three varieties each of the brown and cinnamon bears, as the "large," the "small," and the "real" brown or cinnamon bear, respectively. The black form is represented as being similarly variable in size. From the reports of hunters, there seem to be endless varieties, especially in respect to size and color, without a very sharp demarcation of either varieties or races.

The Raccoon (*Procyon lotor*) was unknown to the hunters as an inhabitant of this region.

BOVIDÆ.

The Buffalo (*Bison Americanus*) existed here abundantly not many years since, but is not now found south of the Black Hills, or nearer than sixty to eighty miles. But their skulls and skeletons, partially decomposed, are still common.

14. **Ovis montana.** Rocky Mountain Sheep. "Big Horn." Small herds are still more or less frequent in the mountains, but they are materially decreasing in numbers every year. They now occur only at distant points and in the most inaccessible places, and the professional hunters start in pursuit of them with far less confidence

of success each year. Although very wary and difficult to approach, the "professional," through an intimate knowledge of their habits and the skilful use of breechloading rifles, often succeeds in destroying a whole band when once he has satisfactorily chosen his point of attack. Our hunters brought us in thirteen obtained on a single excursion for them, and killed from a band of fifteen. The other two were killed, but could not be got at.

ANTILOCAPRIDÆ.

15. Antilocapra Americana. Pronghorn. Antelope. Abundant. Found everywhere on the plains in large herds. Their extermination, however, seems to be rapidly approaching, from the rate at which they are at present slaughtered. Thousands are killed within the radius of a few miles, every year, for the eastern and western markets, a large proportion of those killed here being sent to Utah, Nevada and California. The best of the antelope season occurs in October and November, the elk and deer being the more profitable game later in the season. The hunters select the most favorable points along the railroad for their headquarters, and for weeks together the more successful of them take from five to eight or ten saddles each per day, for which they find ready sale. One party whose camp I visited averaged over fifteen dollars a day each, during the best of the season, from the sale of their antelope saddles. Probably the antelopes occur at present in no greater numbers anywhere than in southern, and especially in southwestern, Wyoming, where bands of hundreds are often visible, and the smaller herds are innumerable. They are, however, already perceptibly decreasing in numbers in consequence of this wholesale slaughter.

CERVIDÆ.

16. Cervus Canadensis. Elk. Abundant, particularly about Elk Mountain, and neighboring portions of the Medicine Bow Range.

17. Cervus macrotis. Mule Deer. Abundant.

18. Cervus leucurus. White-tailed Deer. Not common, and appears not to associate generally with the *C. macrotis*, which is here far more numerously represented. We obtained a single specimen from our hunters, who reported it to be the only example they had met with for many months.

JACULIDÆ.

19. Jaculus Hudsonius. Jumping Mouse. Said to be common.

MURIDÆ.

20. Mus musculus. House Mouse. Abundant in the houses, from which it drives the native vesper mice.

21. Hesperomys leucopus, var. **sonoriensis** Coues' MS. White-footed Mouse. Abundant.

22. Neotoma cinerea. Wood Rat. "Mountain Rat." Common.

23. Fiber zibethicus. Muskrat. Common.

GEOMYIDÆ.

24. Thomomys rufescens. Fort Union Gopher. Common.

CASTORIDÆ.

25. Castor fiber. Beaver. Abundant.

SCIURIDÆ.

26. Tamias lateralis. (*Spermophilus lateralis* Baird.) Say's Striped Squirrel. Said to be common.

27. Tamias quadrivittatus. Missouri Striped Squirrel. Abundant.

28. Spermophilus Richardsoni. Tawny Gopher.

HYSTRICIDÆ.

29. Erethizon dorsatus, var. **epizanthus.** Porcupine. Common in the timber.

LEPORIDÆ.

30. Lepus campestris. Prairie Hare. More or less common everywhere, but exceedingly abundant at certain localities.

31. Lepus sylvaticus, var. **artemisia.** Sage Rabbit. Very numerous everywhere.

32. Lepus Americanus, var. **Bairdii.** A rabbit which is white in winter occurs in the timber in considerable abundance, and is doubtless the *Lepus Bairdii* Hayden.

PART IV.

On the Mammals of Great Salt Lake Valley, Utah.

The following notes are based mainly on information kindly communicated to me by Mr. E. D. Mecham, of Ogden, Utah. Mr. Mecham was formerly an agent of the American Fur Company, and has spent twenty years as a trapper, hunter and guide in the Rocky Mountains. His expeditions have extended from the Saskatchewan on the north to Texas and Mexico on the south, and from the Missouri River to the Sierra Nevada Mountains. Not only are most of the notes respecting the relative abundance of the species of the following list given on his authority, but I have thought it worth while to incorporate also some general facts relative to their range, which he has had the kindness to communicate to me. The list proper refers more directly to the northern portion of the Great Salt Lake Basin, and more especially to the immediate vicinity of Ogden. The notes hence refer in part to the neighboring portions of the Wahsatch Range as well as to the valley itself.

FELIDÆ.

1. Felis concolor. Not common, but quite generally distributed.

2. Lynx Canadensis. Canada Lynx. "Bull Cat." Common in the mountains as far south as Southern Utah.

3. Lynx rufus. Bay Lynx. Common, but chiefly confined to the mountains.

CANIDÆ.

4. Canis lupus. Gray Wolf. Common.

Respecting the color varieties of the Gray Wolf and their distribution, Mr. Mecham's observations are as follows: The gray wolves occur everywhere. The black variety he had never met with south of the Salmon River, nor had he seen any skins obtained south of that point, but to the northward this is the most prevalent color. The red wolf he had met with only in Texas and the adjoining plains. The white wolf he had not found south of northern Utah, except to the eastward of the main chain of the Rocky Mountains, where it occurs as far south as Texas. The white wolves he considered the largest, the black the next in size, the gray being generally a little smaller.

5. Canis latrans. Prairie Wolf. More or less common throughout the plains and deserts of the interior.

6. Vulpes vulgaris, var. **macroura.** Fox. Common, running into the usual varieties. The red fox, according to Mr. Mecham, is much less plentiful now than formerly. The "silver-gray," "cross," and "black" varieties prevail to the northward, but are rarely met with in the Great Salt Lake Valley. These are rather larger than the ordinary red fox, and their fur is finer and more plentiful. Among these varieties is of course included the so-called *V. macroura.*

MUSTELIDÆ.

7. Putorius ermineus. Ermine Weasel. Common.

8. Putorius lutreolus, var. **vison.** Mink. Common in Salt Lake Valley, and in the adjoining mountains along all the streams. Has not been met with by Mr. Mecham south of the Arkansas. Respecting the fur, he says it is not more than one-third as thick at the south as it is far north, where it is also nearly jet black in color, while at the extreme south it is nearly roan.

9. **Gulo luscus.** Wolverene. Not common. Obtained from Mr. Mecham a specimen killed by him near Ogden, in June, 1871.

10. **Lutra Canadensis.** Otter. More or less frequent in Salt Lake Valley, and in the adjoining mountains.

11. **Mephitis mephitica.** Common Skunk. Common in Salt Lake Valley and throughout the plains and mountains generally.

12. **Mephitis bicolor.** Striped Skunk. Mr. Mecham gives its northern limit as about one hundred miles south of Ogden.

13. **Taxidea Americana.** Badger. Of common occurrence everywhere, as well in the mountains as on the plains.

PROCYONIDÆ.

14. **Procyon lotor.** Raccoon. Mr. Mecham gives it as rare in the mountains bordering the valley, but was not aware of its occurrence in the valley itself.

URSIDÆ.

15. **Ursus arctos.** Bear. Common in the mountains everywhere, in its principal varieties, as the black, brown, cinnamon and grizzly. In common with most hunters, he regards these forms as distinct species. The cinnamon bear he gives as the smallest, with an average weight of one hundred to one hundred and fifty pounds. The brown bear is next in size, the black third in size, and the grizzly the largest. Has killed grizzlies weighing fourteen hundred pounds. Black bears sometimes weigh four hundred pounds, but their more common weight ranges from two hundred to three hundred. At a menagerie in Salt Lake City I had an opportunity of observing alive and side by side specimens of the black, brown and cinnamon varieties. The only essential difference seemed that of color, and this is slight between the so-called brown and cinnamon varieties. The maximum differences in physiognomy and proportions were between two specimens of the "brown" bears, in which the length of the nose and the facial expression generally was markedly different.

BOVIDÆ.

The buffalo (*Bison Americanus*) appears to have been abundant at some remote time in the Great Salt Lake Valley. Fragments of their skulls are still here and there visible, but unless partially buried in the marshes they have crumbled and nearly disappeared. I met with several well preserved skulls on the marshes just north of Salt Lake City, which had been exposed in throwing up the earth for the railroad bed. It is stated that as late as 1836, large numbers of buffalo existed in this valley, but that a winter of remarkable severity immediately following, when the snow is said to have fallen to an average depth of ten feet, nearly exterminated them, and that the few that survived soon after disappeared. They seem also to have formerly extended much to the westward of the Great Salt Lake Valley, Mr. Mecham assuring me that he has not only seen their skulls bleaching on the plains to the westward, but also on the eastern slope of the Sierra Nevada Mountains, on the so-called Hastings trail. I have also received substantially the same report from others, these accounts being wholly independent and from persons unknown to each other. They have, however, scarcely been seen west of the Green River for thirty years.

Mr. Mecham, alluding to his experience with the buffalo, says he saw "millions" of them on the Laramie Plains in 1846. When the emigrants began to cross these plains they slaughtered the buffalo recklessly, killing thousands for which they had no use. This wholesale butchery alarmed the Indians for the fate of these, to them, indispensable animals, and to save them from destruction and perhaps to annoy the whites, they drove them away from the regular emigrant trail, endeavoring to keep them as much as possible out of the reach of the emigrants. But this precaution seems to have availed little, as they continued to decrease rapidly in numbers. A few still straggle to the northern edge of these plains, from their range farther north, but over vast areas in Wyoming and Nebraska, where twenty to twenty-five years ago they existed in abundance, they have now become wholly extinct.

16. Ovis montana. Rocky Mountain Sheep. Found here and there in the Wahsatch Range, but are rapidly decreasing in numbers.

The Rocky Mountain Goat (*Aplocerus montanus*) occurs about two hundred miles north of Ogden, whence specimens have been received at the Museum of Comparative Zoology, collected by Mr. Mecham. This is the most southerly point of their occurrence known to Mr. Mecham.

ANTILOCAPRIDÆ.

17. Antilocapra Americana. Pronghorn. "Antelope." Occurs about forty miles west of Ogden, and was formerly more or less numerous throughout the Valley. Captain Stansbury, in his *Expedition to the Great Salt Lake*, speaks of finding them on Antelope and Stansbury Islands, during his survey of the lake in 1850.

CERVIDÆ.

18. Cervus Canadensis. Elk. More or less common in the mountains bordering the valley. Mr. Mecham has seen them as far south as the Mexican boundary, and speaks of having met with droves of two thousand individuals in southern New Mexico.

19. Cervus macrotis. Mule Deer. Common at favorable localities.

20. Cervus leucurus. White-tailed Deer. Found in the valleys, but less plentiful than the preceding.

JACULIDÆ.

21. Jaculus Hudsonius. Common.

MURIDÆ.

22. Mus musculus. House Mouse. Common. Lives chiefly in the houses, but also frequents the fields. It arrived here many years since, but neither *M. rattus* nor *M. decumanus* seems to have yet appeared.

23. Hesperomys leucopus, var. **sonoriensis.** White-footed Mouse. Abundant.

24. Neotoma cinerea. Wood Rat. Common.

Another wood rat (*N. Mexicana?*), with the tail hairy only at the base, is said by Mr. Mecham to occur two or three hundred miles farther south.

25. Arvicola ——? A large dark-colored *Arvicola*, of the size of *A. riparius*, is represented as common.

26. Fiber zibethicus. Muskrat. Common in the Great Salt Lake Valley and ranges five or six hundred miles farther south.

GEOMYIDÆ.

27. Thomomys rufescens? The mounds of a species of *Thomomys* are common, but I had no opportunity of examining specimens of the animal.

CASTORIDÆ.

28. Castor fiber. Beaver. Common at favorable localities.

SCIURIDÆ.

29. Sciurus Hudsonius, var. **Fremonti.** Fremont's Squirrel. Common everywhere in the pineries. Said to be the exact counterpart of the eastern red squirrel in notes and habits. I could learn of the occurrence of no other species of *Sciurus* in this region.

30. Sciuropterus volucella. Flying Squirrel. Common.

31. Tamias lateralis. Say's Striped Squirrel. Common.

32. Tamias quadrivittatus. Missouri Striped Squirrel. Common.

33. Spermophilus Harrisi. Harris's Striped Squirrel. Abundant.

34. Spermophilus grammurus. A second and larger species of *Spermophilus* is also represented as abundant. This is undoubtedly *S. grammurus*, specimens of which, collected in this vicinity have been brought in by Dr. Hayden's parties.

35. Cynomys Columbianus. (*C. Gunnisoni* Baird.) Short-tailed Prairie Dog. According to Mr. Mecham, this animal is found as far west as the Sierra Nevada Mountains, but is not of common occurrence in Salt Lake Valley. Smaller than *C. Ludovicianus*, and unfit for food; the other is regarded as excellent eating. The *C. Columbianus* lives in more desert regions and feeds so much upon the different species of *Artemisia* as to be thoroughly impregnated with their peculiar flavor.

36. Arctomys flaviventer. Yellow-footed Marmot. Common in the higher parts of the mountains, living among the rocks.

HYSTRICIDÆ.

37. Erethizon dorsatus, var. **epixanthus.** Porcupine. Not common. Ranges southward to the headwaters of the Arkansas, Red, Gila and Del Norte rivers. Much smaller and lighter colored southward.

LAGOMYIDÆ.

38. Lagomys princeps. Little Chief Hare. Under the name of "Mountain Rat," this species is well known to Mr. Mecham, who has often met with it, both to the northward and southward, near the tops of the higher snow-capped peaks of the Rocky Mountain Ranges. He described to me the animal and its habits so accurately as to leave its identity beyond question.

LEPORIDÆ.

39. Lepus callotis. Jackass Rabbit. Common.

40. Lepus campestris. Prairie Hare. Common.

41. Lepus sylvaticus, var. **artemisia.** Common.

42. Lepus Americanus, var. **Bairdii?** In addition to the three species of *Lepus* above named, of which we obtained specimens, a fourth was described to me as inhabiting the higher parts of the mountains. It is probably the *L. Bairdii* Hayden and is said (perps erroneously) to remain white the whole year.

Regular Meeting, Monday, April 6, 1874.

Meeting this evening at 7.30 o'clock. The President in the chair. Records read.

Henry C. Hewitt, George A. Bates and Olney W. Brooking, all of Salem, were duly elected resident members.

The reading of the paper assigned for this evening was postponed.

Adjourned.

Regular Meeting, Monday, April 20, 1874.

Meeting this evening at 7.30 o'clock. The President in the chair. Records read.

In the absence of the Secretary, Mr. Maurice H. Richardson was elected Secretary *pro tem.*

The Secretary announced the following correspondence:—

C. D. Bradley, Boston, March 30; E. W. Buswell, Boston, March 9; J. W. Chadwick, Brooklyn, New York, March 30; N. Cleaveland, Westport, Conn., March 16; Henry B. Dawson, Morrisania, New York, Nov. 21, Jan. 16; S. G. Drake, Boston, April 7; J. A. Gillis, Salem, Oct. 13; George L. Gleason, Feb. 25, March 26; A. Gray, Cambridge, April 14; S.A.Greene, Boston, Feb. 20; John P. Minkler, Albany, New York, March 24; N. Paine, Worcester, April 14, 16; Daniel A. Rogers, Chicago, Ill., March 16; J. L. Sibley, Cambridge, Feb. 17; A. S. Tiffany, Davenport, Iowa, March 19; S. V. Summers, New Orleans, La., March 26; American Swedenborg Printing and Publishing Society, New York, March 19; Naturforschende Gesellschaft in Basel, Feb. 13; Die Naturforschende Gesellschaft in Bern, May, 1873; Boston Public Library, Feb. 20, March 27; Naturwissenschaft Verein zu Bremen, Jan. 6; Buffalo Historical Society, March 23, April 15; Geological Survey of India, Calcutta, Dec. 1; Die K. Gesellschaft der Wissenschaften zu Gottingen, Jan. 21; Literary and Philosophical Society of Liverpool, Feb. 25; Die K. Bayerischen Akademie der Wissenschaften, Munchen, Dec.; New England Historic-Genealogical Society, April 16; New Jersey Historical Society, March 23; New York Historical Society, March 24, April 15; New York Lyceum of Natural History, March 23; Ohio Historical and Philosophical Society, March 24; Rhode Island Historical Society, March 23; Société Entomologique de Russie, Sept 8.

The Librarian reported the following additions:—

By Donation.

Boardman, Samuel L., of Augusta, Maine. The Wealth and Industry of Maine for 1873, by W. E. S. Whitmore.

Boon, E. P., of New York, N. Y. The Corwin Genealogy, by E. T. Corwin. 1 vol. 8vo. New York, 1872.

Bradlee, Rev. C. D., of Boston, Mass. "Death and the Resurrection," a Sermon preached Sunday, March 15, 1874, by donor.

City of Boston. City Documents for 1873. 4 vols. 8vo.

Cutter, Abram E., of Charlestown, Mass. Annual Reports of the Trustees of Charlestown Free Schools. 1874.

Devereux, Geo. H. Key to North American Birds, by E. Coues. 1 vol. 8vo Salem, 1872.

Emerton, James. Salem Directory for 1872. 1 vol. 8vo.

Foote, Rev. H. W., of Boston. Sermon at King's Chapel in Memory of Charles Sumner, March 22, 1874, and Services at the Funeral, March 16, 1874.

Green, S. A., of Boston. Miscellaneous pamphlets, 27.

Hill, Wm. M. Manual of the Common Council for 1874.

Holden, N. J. The Commonwealth for 1873.

James, Mrs. Thomas P., of Cambridge. The Potts Memorial, by donor. 1 vol. small 4to. Cambridge, 1874.

Mack, E. C. The Daguerrotype and Foreign Miscellany. 36 numbers. The Radical. 30 numbers.

Massachusetts Horticultural Society. Miscellaneous pamphlets, 50.

Morse, E. S. Miscellaneous pamphlets, 31.

Nutting, Miss M. O., of South Hadley, Mass. Catalogue of the Mount Holyoke Female Seminary, 1873–4.

Phillips, W. P. Annual Report of the Mass. Charitable Eye and Ear Infirmary, 1874.

Putnam, F. W. Manual of Instruction and Check List of the Birds of North America, by E. Coues. 1 vol. 8vo.

Silsbee, Mrs. B. H. Miscellaneous pamphlets, 200.

State Board of Health of Mass. Fifth Annual Report, Jan., 1874.

Stephens, W. H., of Lowville, New York. Memorial of Dr. J. M. Sturtevant. 1 vol. 8vo. New York, 1874.

Stickney, M. A. Christian Observer, 1815, 1816. 2 vols. 8vo.

U. S. Patent Office. Official Gazette for Feb. 24, March 3, 10, 17, 24, 1874.

Whitaker, A. E., of San Francisco, Cal. Annual Report of the President, Treasurer and Librarian of the Mercantile Library Association of San Francisco. 1873.

Williams, H. L. The Fiji Gazette, Oct. 11, 1873.

By Exchange.

Archiv der Anthropologie, Braunschweig. Band vi. Heft 3, 1873.

Bibliotheque Universelle et Revue Suisse. Archives des Sciences Physiques et Naturelles. No. 192. Dec., 1873. Genève.

Botanisk Tidsskrift in Kjöbenhavn Tidsskrift, Anden Række, Andet and Tredje Binds, Fredje and Forste Haefte, 1872-73. 2 pamphlets 8vo.

Geological Survey of India. Memoirs of the, Palæontologia India. Vol. i, pt. 1, Vol. iv, pts. 3, 4, 1873. 3 pamphlets, 4to. Records of the, Vol. vi, pts. 1, 2, 3, 4, 1873. 4 pamphlets, 8vo. Memoirs of the. Vol. x, pt. 1, 1873. 8vo pamphlet.

Gesellschaft Naturforschender Freunde in Berlin. Festschrift zur Feier des Hundertjährigen Bestehens der Gesellschaft. 1 vol. 4to. Berlin, 1873.

Institut Historique in Paris. L' Investigateur, 39 Anneé Juillet-Dec., 1873. 2 pamphlets, 8vo.

Institut National Genevois. Bulletin, tome xviii, 1873. 1 vol 8vo.

Königliche Gesellschaft der Wissenschaften Gottingen. Nachrichten, 1873. 1 vol. 12mo.

Königlisch Bayerischen Akademie der Wissenschaften in München. Sitzungsberichte, der Philos. Classe. Heft iv, v, 1872, Heft i, ii, iii, iv, 1873. 6 pamphlets, 8vo. Sitzungsberichte, der Math. Classe, Heft iii, 1872, Heft i, ii, 1873. 3 pamphlets; 8vo.

Kongelige Danske Videnskabernes Selskab in Kjöbenhavn. Oversigt, No. i, 1873.

Minnesota Historical Society. Annual Report of. 1873.

Natural History Society of Montreal. The Canadian Naturalist, Vol. vii. No. iv, 1874.

New Hampshire Historical Society. Proceedings of the. 1872–73, including the Semi-Centennial Exercises, May 22, 1873.

Philadelphia Academy of Natural Sciences. Proceedings of the. Pt. iii, Oct., Nov., Dec., 1873.

Société d' Acclimatation. Bulletin Mensuel, 2me séries, tome x, No. x, xi, Oct., Nov., 1873. 2 pamphlets, 8vo.

Société d' Agriculture, Sciences et Arts de la Sarthe, Le Mans. Bulletin, tome xxi, 4e Trim, 1871–72, tome xxii, 1er, 2e and 3e Trim, 1873–74. 2 pamphlets, 8vo.

Société Entomologique de Russie in St. Petersbourg. Horæ Societatis Entomologicæ Russicæ, tome viii, Nos. iii, iv, 1871–72, tome ix, Nos. i, ii, 1872. 2 pamphlets, 8vo.

State Historical Society of Iowa. The Annals of Iowa for Jan., 1874.

Publishers. American Justifier. Forest and Stream. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Salem Observer. Salem Post. Peabody Press.

Daniel A. Varney, of Salem, was elected a resident member.

A committee, consisting of Messrs. James Kimball, W. P. Upham, John Robinson, Caleb Cooke and William Neilson, was appointed to nominate a list of officers to be presented for election at the annual meeting.

Prof. E. S. Morse, of Salem, presented some interesting and highly instructive remarks on the various modes of illustration, with brief historical sketches of the same. He first alluded to some of the earlier forms known to have been used, and specified several books printed at that period, with appropriate and apt illustrations.

He then spoke of wood engraving, the kind of wood used, the manner of preparing the same, the peculiar tools, etc.; also the process of electrotyping, which is now so universally adopted. Copper plate and steel engraving were next described; then the process of lithography; and he alluded briefly in conclusion to the heliotype, albertype and woodburytype. Mr. Morse stated that he would like to speak more fully at some future meeting on the last named processes of illustration. He exhibited several striking specimens of the various styles, and illustrated his remarks by sketches on the blackboard.

Vice President F. W. Putnam thought that perhaps the printing by uncivilized races, by the use of hand stamps for the impression of designs in color upon various materials, especially the several kinds of "cloth" made from wood-fibre, really involved all the principles of the arts of engraving and printing, and, like many other things common in our daily life, proved that the principles involved were discovered or gradually developed under various circumstances and in various ways by the wants and desires of man, showing a uniform working of the human intellect, though of course modified by surrounding conditions.

A brief discussion followed, participated in by Messrs. G. A. Perkins, F. W. Putnam, E. S. Morse and others.

Mr. F. W. **PUTNAM** exhibited a photograph of a skull received from the Davenport Academy of Natural Sciences, as that of a Moundbuilder. The description printed on the back of the photograph reads, "Skull of 'a Mound Builder' from shell-bed on Rock Island." Mr. Tiffany, in his letter accompanying the photograph, states that there were six other skulls found in the "shell-bed," and also a plate of mica and several other articles. The following description of the locality in which the skull was found accompanied the photograph:—

"The skull known as the shell-bed skull was discovered by A. S. Tiffany in Nov., 1871, and contributed by him to the Davenport Academy of Natural Sciences, with description.

On the Rock Island Arsenal grounds, near the western extremity of the island, there had been an excavation about three hundred feet long and eight feet deep. Three feet from the top there was a deposit of shells, mostly species of Unio, Melania subsolida, and two or more species of Helix. The shell-bed at this place varies from six to sixteen inches thick.

In this shell-bed the skull and bones belonging to one individual were found; all the covering above the bones was an aqueous deposit; above the shells, as well as with them, there were water-worn pebbles and sand, the material becoming finer towards the top, the last foot being fine alluvium and vegetable mould; the sedimentary lines were perfect and unbroken. The excavations had made the means of observing all that could be desired.

The place was visited by many members of the Society and by Prof. Alexander Winchell, while some of the bones were in place, and all agree that the soil covering this prehistoric man was a sedimentary deposit.

Accurate levelling proves the top of this deposit to be eighteen feet above the highest water known in the Mississippi since Fort Armstrong was established on the island."

Mr. Putnam thought that the indications were that the relics were those of the ancient Indians rather than Moundbuilders. He did not know of any shell-beds formed by the Moundbuilders, though common as Indian refuse heaps, and the fact that large pieces of mica had been found in Indian graves here in Massachusetts proved that the Indians as well as the Moundbuilders placed a special value on that substance.

Mr. PUTNAM also exhibited a large tooth of a shark, presented by Rev. D. P. Noyes of Pigeon Cove, who obtained it from Mr. Andrew Johnson, one of two men who, while in a dory deeply laden with fish, near St. Peter's Bank, had been fiercely attacked by a large shark, which bit at the dory, leaving the marks of one jaw on the bottom of the boat and of the other on the side. The boat was tipped by the shark to such an extent as to spill part of the fish and take in water, and was kept afloat only by vigorous bailing. The fragments of several teeth were found in the wood. The perfect specimen was from the front of the under jaw, and was 1·8 inches in length from the centre of its root to its point, and from the extreme end of its root, 2·1. Its extreme width at base, across the root, was 1·5 inches. On comparison with specimens of large sharks in the Museum of Comparative Zoology, made by Mr. Garman, it was estimated that a tooth of this size would indicate a total length for the animal of more than thirteen feet. Judging from the single tooth, the shark was probably a specimen of the *Carcharias* (*Prionodon*) *lamia*, or a closely allied species, and is a very interesting addition to the fauna of our eastern coast.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., MAY, 1874. No. 5.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, APRIL 20, 1874.

[*Continued.*]

PREVIOUS to the adjournment the PRESIDENT alluded to the recent death of Prof. Alpheus Crosby, who during his residence in Salem had been an interested member, held several offices, and taken an active part in some of the operations of the Institute. He had also been President of the Salem Athenæum, and from 1858 to 1864 Principal of the State Normal School in Salem.

Dr. GEORGE A. PERKINS, after some appropriate remarks, introduced the following resolutions :—

WHEREAS, in the providence of God, the earthly life of our associate and friend, Professor ALPHEUS CROSBY, has reached its close :

Resolved, That, with profound sorrow at the loss we sustain in his lamented death, we place on record our sincere testimony to his eminent talents and exalted worth.

Resolved, That, with honorable pride and reverent regard, we shall remember our departed friend as a distinguished Scholar, whose works were a blessing to the student and an honor to his country; as an Educator, whose zeal inspired all that came within the broad circle of his influence, and whose wisdom guided many in the paths of true knowledge; as a Philanthropist, who kindly, but fearlessly, labored for the relief of the suffering and the oppressed of every race; as a Citizen who was always ready to perform the duties which every man owes society; and as a Neighbor and Friend, whose genial spirit, tender sympathies and kindly acts will long be cherished in grateful memories.

Resolved, That, while we proffer our heartfelt sympathy to the family of our friend, we rejoice with them in the full assurance that his death is but his entrance into immortal life.

Mr. F. W. PUTNAM seconded the resolutions, and in his remarks alluded to the interest Prof. Crosby had always taken in the Natural History Department of the Institute, and his appreciation of Science. He also spoke of the formation of the Cabinet of Natural History at the State Normal School in this city as due to Prof. Crosby, who, while principal of the school, had greatly encouraged the study of the Natural Sciences and commenced the museum. At that time and for many years after he took an active interest in the encouragement of the study, and it was most fitting that the Institute should do honor to his memory, and thus acknowledge his great scholarship, his sympathy in its work and his worth as a valued member.

The resolutions were then adopted, and the Secretary was requested to enter them upon the records and to send a copy to the family of the deceased.

Adjourned.

REGULAR MEETING, MONDAY, MAY 4, 1874.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

In the absence of the Secretary, MAURICE H. RICHARDSON was requested to act.

The SECRETARY announced the following correspondence:—

From George H. Allen, May 1; Samuel Dawson, Montreal, April 23; R. R. Endicott, Beverly, April 29; Oscar Faulhaber, Haverhill, May 2; H. W. Lowry, Lane Seminary, Walnut Hills, Ohio, April 2; Robert Manning, April 21; George H. Preble, Boston, April 23; E. A. Silsbee, Boston, May 2; William H. Yeomans, Columbia, Conn.; Buffalo Historical Society, April 27; Iowa State Historical Society, April 16, 23; Minnesota Historical Society, April 20; New Jersey Historical Society, April 29; New York Lyceum of Natural History, April 27; Ohio Historical and Philosophical Society, April 17; U. S. Department of Interior, April 29; Smithsonian Institution, April 18, 24.

The LIBRARIAN reported the following additions:—

By Donation.

APPLETON, FRANCIS H., of Peabody. Bulletin of the Bussey Institution. P. II, 1874.

DAWSON, SAMUEL, of Montreal, Ca. The Canadian Naturalist and Geologist. Vol. v. Vol. iii, n. s., No. 4. Jan., 1868. Vol. vi, n. s., No. 2. 1871.

DEPARTMENT OF THE INTERIOR, WASHINGTON, D. C. Report of the Committee, 2d Session, 42d Congress, 1871–72. 3 vols. 8vo. British Counter Case and Papers, Arbitration at Geneva, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo. House Journal, 2d Session, 42d Congress, 1871–72. 1 vol. 8vo. Treatise and Conventions since July 4, 1776, 3d Session, 41st Congress, 1870–71. 1 vol. 8vo. British Case and Papers Arbitration at Geneva, 2d Session, 42 Congress. 1871–72. 3 vols. 8vo. Patent Office Reports, 2d Session, 41st Congress, 1869–70. 3 vols. 8vo. Executive Documents, 1st Session, 42d Congress, 1871. 2 vols. 8vo. House Miscellaneous, 1st Session, 42d Congress, 1871. 1 vol. 8vo. House Journal, 1st Session, 42d Congress, 1871. 1 vol. 8vo. Senate Reports, 1st Session, 42d Congress, 1871, 1 vol. 8vo. Senate Documents, 1st Session, 42d Congress, 1871. 1 vol. 8vo. Senate Journal, 1st Session, 42d Congress, 1871. 1 vol. 8vo. Senate Miscellany, 1st Session, 42d Congress, 1871. 1 vol. 8vo. Senate Journal, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo. Senate Documents, 2d Session, 42d Congress, 1871-72. 2 vols. 8vo. Senate Miscellaneous, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo. Senate Reports, 2d Session, 42 Congress, 1871–72. 5 vols. 8vo. Executive Documents, 2d Session, 42d Congress, 1871–72. 7 vols. 8vo. Report of the Secretary of War, 2d Session, 42d Congress, 1871–72. 2 vols. 8vo. Report of the Secretary of the Interior, 2d Session, 42d Congress, 1871-72. 2 vols. 8vo. Report of the Comptroller of the Currency and Commissioners of Internal Revenue, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo. Affairs in the late Insurrectionary States, 2d Session, 42d Congress. 13 vols. 8vo. Camp Mohave, Commerce and Navigation Customs Tariff

Legislation, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo. Explorations and Surveys for a Ship-Canal Isthmus of Tehuantepec, 2d Session, 42d Congress, 1871-72. 1 vol. 4to. Report of the Department of Agriculture, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo. Message and Reports of Department, Foreign Relations of the United States, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo. Annual Reports Secretary of the Treasury, Postmaster General, Secretary of the Navy, 2d Session, 42d Congress, 1871-72. 1 vol. 8vo.

HODGES, MARY O. The Boston Fire, by T. E. Frothingham. 1 vol. 12mo. Plan of Greenwood Cemetery.

LEE, JOHN C. Commercial Bulletin for March, April, 1874.

MERRITT, LUCINDA F. The Shanghai Budget, Dec. 31, 1873, Jan. 8, 15, 22, 29, Feb. 5, 12, 19, 1874.

MORSE, E. S. Forty-fourth Annual Report of the Common Schools of Cincinnati, 1874.

PALFRAY, C. W. The American Law Register, 14 numbers. The Mining Magazine, 6 numbers. The Republic, 4 numbers. Blackwood's Edinburgh Magazine. 8 numbers. Miscellaneous Reviews, 16 numbers. Miscellaneous pamphlets, 25.

POOLE, W., Wenham. Annual Report of the School Committee of Wenham. March, 1874. Annual Report of the Selectmen of Wenham. Feb., 1874.

WALLIS, Mrs. C. A. The Naval Gazetteer. 1 vol. 8vo. London, 1871. Massachusetts Register and Military Record, 1862. 1 vol. 8vo. Public Documents for 1838, 1839, 1846. 4 vols. 8vo. A Treatise on the Plague and Yellow Fever. 1 vol. 8vo. 1799. The Hierophant. 1 vol. 8vo. United States Weekly Telegraph, 1831, 2 vols. 8vo. Patent Office Report, 1848, 1850-51, 1852-53, 1857. 4 vols. 8vo. Twenty-third Annual Report of the Board of Education, 1860. 1 vol. 8vo. Political Works of Thomas Paine. 1 vol. 8vo. Mitchell's United States. 1 vol. 8vo. Illustrations of the Divine Government. 1 vol. 8vo. Sermons by O. Dewy. 2 vols. 12mo. Triumph, by Rev. Samuel Hutchinson. 1 vol. 16mo. History of Charles the Twelfth. 1 vol. 12mo. 1833. Dictionary of Thomas Sheridan. 1 vol. 16mo. 1796. Names and Titles of Jesus. 1 vol. 8vo. The Principles of Grammar. 1 vol. 12mo. A Geological Reconnoissance of the State of Tennessee. 1 vol. 8vo. 1856. Memoir of Philip Lindsley. 1 vol. 8vo. 1859. Life of Bonaparte. 1 vol. 12mo. Inquiry, by W. Balfour. 1 vol. 12mo. Memoirs of Lafayette. 1 vol. 12mo. Messages of General Andrew Jackson. 1 vol. 12mo. Election Sermon by W. E. Channing. 1 vol. 8vo. American Almanacs, 1831, 1833. 3 vols. 12mo. Public and Private Economy. 1 vol. 12mo. Capital Punishment. 1 vol. 8vo. The Heavenly Union, by W. H. Porter. 1 vol. 12mo. The Constitution of the Fifteen States. 1 vol. 12mo. Memoir of Rev. E. Payson. 1 vol. 16mo. Chesterfield's Letters to his Son. 3 vols. 16mo. Manual for the General Court for 1857, 1858. 2 vols. 12mo. Mrs. Chapone's Letters. 1 vol. 18mo.

WATERS, J. L. Arnold's First Greek Book. 1 vol. 12mo. Adjutant General's Report of Illinois, 1861-62. 1 vol. 8vo. Report of the Committee on Accounts, 1871. 1 vol. 8vo. Report on Insanity and Idiocy in Mass. 1 vol. 8vo. Commerce and Navigation, 1854. 1 vol. 8vo. Transactions of the Illinois State Agricultural Society, 1857-8. 1 vol. 8vo. Miscellaneous pamphlets, 37.

WILLSON, E. B. Record of Unitarian Worthies for April, 1874. 8vo pamph.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the Annual Meeting, Oct. 21, 1873.

BOSTON PUBLIC LIBRARY. Bulletin for April, 1874.

BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin of. Vol. i, No. 4. 1873-74.

CANADIAN INSTITUTE OF TORONTO. The Canadian Journal for April, 1874.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Historical and Genealogical Register for April–June. 1874.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Record of the. Vol. v, No. 2. April, 1874.

PUBLISHERS. American Naturalist. Forest and Stream. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Observer. Salem Post. Silliman's Journal.

Edward Thompson, of Salem, was elected a resident member.

EDW. A. SILSBEE, of Salem, gave a familiar talk on art matters. The following is an abstract of his remarks :—

WE must go to Europe to see art in its greatness and extent. Driven through a hundred galleries, we come to know something at last. One day we wake and find ourselves *connoisseurs*. We grow confident. We go alone. But time is needful to mature taste. It grows by lying fallow, and is a constant revision of previous judgments. It is an induction like science, and should be wide as the subject.

Art is a double sense, an eye behind the natural eye. Artists look upon nature with subtler vision. They interpret it for us. We must look with their eyes to enter into their work. They multiply our senses and give us enjoyments undreamt of before. Poets do the same. Without being artists or poets we can get from them their key of vision, as families and friends grow alike by natural imbuing and like atmosphere. Thus we have the genius of the world at command, and live on the top of all the ages. Goëthe went far to realize this. It is culture in its ideality and entirety. Emerson would do it with more artistic temperament. Artistic sense differs from the poetic. The one is general, emotional; the other professional. They should play into each other. Artist should be poetic; poet artistic.

Poetry, painting, music, sculpture, architecture, are varying phases of one sense of the beautiful. Criticism is interchangeable in these arts. Feeling, execution, we speak of in either. Feeling is genius; execution, talent. The comprehension of feeling is a great way in art.

American art is scenic, external, no quick sympathy with nature in her every-day mood. It must fly to mountains, Niagaras, icebergs, as if the miracle of nature were not lying around us every day, to hold us with wonder or thrill us with enthusiasm; the ineffable significance in common things, complexity in simplicity, simplicity in complexity; the infinite as conspicuous in a weed as in a world. Zoologists might as well only study elephants, botanists trees, or geologists mountains. Church, Bierstadt, do the whole of nature at a blow. Snow mountains, middle distance, foreground, waterfalls, Indians, encampments,—enough for a dozen pictures in one. They seem to say, "walk up, gentlemen, so much for your money." One cannot take in so much at a time. You might as well put tragedy, comedy, elegy, pastoral in one poem. Turner is open to the same criticism; but he had an epic genius, sympathy, imaginative power, great artistic sensibility and expression. He is florid in taste, not simple — Byronic, the same unquiet impulses and artificial associations in subject, *tourmentée*— surfeited with, *embarras de richesse.*

The French school is simple, does not attempt rashly the sublime, nor do too much in one composition. They paint the nearness and intimacy of nature, her every-day. Nothing sensational, belittling, conventional or hackneyed comes into their work. Nature is endless, and they know it and cling to it. We, when we are not grandiose, are pretty, never subtle. They are sincere, meet nature face to face, need nothing local, romantic, trite or obvious to inspire them. Nature is revealed to them. You walk into their pictures as into a garden or a field, every minute part is felt and well given. Our art is thin, distant objects are faint, not far; modelling, linear perspectives, relations of tint, tone, texture, color; sense of form, reflected lights, aërial perspectives; are ignored or not known. The whole is flat. These relations are "values," an inestimable word. The French level spaces, shrubs, trees and ground, shy pools and furtive grasses or weeds, carefully rendered as they are, are worth legions of rocky mountains and hearts of the Andes done in this shallow, conventional way. With its blended outline, French art gives us what we feel when we see, not what we see without feeling, which is our key, and that with half an eye. Our landscape is optical, theirs mental.

Japanese art has the same integrity, never opens its eyes but it sees a picture; more through a window pane indeed than another can see in a whole life; for art is not the seeing, the physical sense, but the significance every object bears to the artistic eye. The Belgians, Dutch, are where the French are, one with nature as she is without adornment. Constable, an Englishman, originated the school but left no following in England. The English are painstaking but unideal; metallic, positive, over brilliant in color. No subtle harmony, or subdued feeling, or gray tones. Wordsworth is yet to be grown up to in art there. German art is stilted when not influenced by the French school. Like English or American painting, it is lost without a subject, a factitious element or motive in the composition other than nature. It must have incident or association, as if nature were not enough. Art in these countries is where poetry was in the last century, artificial or uninspired. It studied form, we study feeling.

In visiting galleries we must watch the mood, not have our eye full of the flaring colors of the street, be patient and wait for the object to glide into our mind, which one day it will do. It cannot be forced, and art is too delicate a thing to be captured *coup de main.* Our knowledge shifts, and taste winnows. It is a step, a gradation. Judgment at last becomes secure, and perception rapid. Coleridge said, "every great artist creates the taste by which he is appreciated." He brings something new into the world, his genius. He must instruct us, not we him. He can teach us to see what we did not see before.

The Greek mind drew all nature into itself, distilled it in the alembic of its imagination, and gave it forth simply as form. Hence the perfection of that form. The northern, Christian, and later mind, feels nature mystically, sympathetically, and does not attempt to embody, personify, reduce to form. Gothic architecture is the greatest fruit of this feeling. It represents the infinite, strives after it, is filled with it. It is unending, flexible, emotional, spiritual. It is a life and literature in stone. For three centuries all that men felt and knew went to it. It created the grotesque. A gray mist of stone, it grows into marvellous life under our eye. It is peopled with Calibans and Midsummer Night's Dreams. It suggests something beyond itself. The Greek did what he felt, the Goth felt what he could not do. The Greek is one intense concentration, fired with the beauty of the world, drawn from all experience, the genius of nature made manifest. The Roman arch expresses dominion, security, serenity, beauty. The Gothic emotion, restless but aspiring, ever pointing upward. The Roman arch, law, the Gothic, religion. Hence the sublime impulse of the northern churches.

St. Peter's fails of effect from this cause. It is prosaic, though huge. You have to accustom yourself to it to feel it. Then it is like a new world by itself, it has enclosed so much of space. It should have been a Greek cross. In that form all mass contributes to unity and impressiveness of effect. Now the façade fritters the dome. One should enter it by the short arm of the cross, then outside and in are one, and we get the grand impression at once.

The great expressions of northern art are Gothic, Michael Angelo, Shakespeare, and, as Herbert Spencer added, Beethoven. Dante was one with Gothic, and not to be separated from it.

The great artists in modern times are Michael Angelo, who created types, and pried into the unknown; Raphael the great musical genius, endless in invention, composition, symphonious and ever graceful, feeling form as a Greek almost, and making it sensuous as Titian did color; Leonardo, who did the inscrutable; Correggio, who played with flame and softness, archness and grace, sweet as a child; Velasquez, who needed nothing but the fact to inspire him, who dignified realism by power and artistic apprehension into ideality; Titian, the great poet, intense in romantic depth of color, who brought back sensuousness without license into the world; Rubens and Rembrandt in the north, and Albert Durer. All other men are to be ranked below these.

Titian includes the Venetians, a noble company. He has, almost alone among moderns, the serenity of the Greek. His pose is unique. He is the Phidias of portrait painting. Tintoret with his fiery power is less than his depth. The "Sacred and Profane Love" is as if dropped out of the sky, and is without effort. As mere painting, it is the greatest picture in the world. Paul Veronese was frank and healthful; a subtile, ingenuous, delightful master, but more external than Titian. Vandyke comes after Rubens and Rembrandt. Rembrandt was a magician, and discovered the poetry in light and shade. Rubens was robustious, splendid, healthful, restored enjoyment of life to men, painted up to nature more than any man, and could do so, and had the largest scope and facility. His style is not searching, or classical, but romantic and perfectly unconfined. Albert Durer was mystical, Gothic, natural, and felt the significance of things. Murillo, more of a poet, must be placed below Velasquez for power.

In sculpture there are few transcendent things, but these are superhuman, and would be incredible if they were not seen. The relics of the Parthenon, the Venus of Milo, a few other Greek fragments—these are heroic. They look as if they had grown, not been made. As in the old Italian pictures the company have happened there, not been placed, Gothic has grown not been built. It is an organic thing, a thing of nature. The Greek temple is the crystallization of all the influences for beauty of the world distilled in one form and object. Even the Belvidere torso, the Laocoon, the Apollo do not attain to this sublime repose, they are *tourmentées* in the comparison.

English art has but few names, but these are unequalled in their kind. Hogarth, Reynolds, Gainsborough, Flaxman, Stotherd, Wilkie, Turner, Constable, Morland, Leslie and Newton, "Old Crome," Blake, a prehistoric man, an artistic mystic, and a few others. The English mind expresses itself in poetry.

Kaulbach, who has just died, had a stilted, academic manner. Grandiose and imposing, full of talent, but like all the Germans, a bad colorist, he was not a genius. They are schoolmasters in art, excogitated, pedantic. If their claim were allowed according to the amount they have done, the old Italians would be dwarfed. Kaulbach's illustrations are obvious, line-y in style, *poseéd*; lack mystery, imagination, suggestiveness.

Three things make sculpture, feeling for form, feeling for life, feeling for character. The Greeks are unapproached in the first two. If the moderns have done any thing it is in the last. Sculpture should take apart like literature, and every fragment should show mastery, vitality, organism. A line of Shakespeare, a passage of Milton, a square foot of Rubens, Veronese, Velasquez proves the master. Modern sculpture will not bear this test.

American organization is finer for art perhaps than the English but lacks robustness. Hunt is the best exemplification of this, and does things not equalled there for artistic sensibility, or indeed on the continent. Puritanism was not an artistic cast of mind or character. We need temperament. The Irish will give us this, and Germans intellectual industry. Puritanism chilled the blood which needs enrichment. Hawthorne, a subtle imaginative genius, was morbid, not enough flesh and blood in him. Emerson, a great teacher, is not creative. We are forty millions in a continent. Nature subdues man here, and makes him a mercantile animal. It will be so for a century or more, till the continent fills in. Meantime best forces, the outcome of forty millions, do not keep each other in countenance, are too scattered. No capital exists, school of art, literature, manners. New York is a mart, Washington a galvanized capital for six months in the year.

We lack passion in poetry. We describe nature, are not near to her. The only sensibility we know of is in Jones Very's sonnets, and Emerson's early essays. The sonnets are Hebraic in their single-mindedness and elevation. They are like voices of nature, purling of brooks or robins' notes; innocent and carolling, they study no form, but have the best, and are Saxon and monosyllabic in style and structure.

The community does not reflect its intelligence in criticism of painting. It is the merest commonplace. Literature, the drama, music, are criticised discriminatingly. People are impatient of criticism in painting, and think their eye as good as another's. This is an art that requires study and delicate judgment as the other arts.

The justification of painting, the reason of its being is, that we give what we feel. Otherwise photography would be the greatest artist, and dispense with all other. Science knows. Art feels. It is the interchange of the soul with the object, each affecting the other, that makes art. Goëthe said art was greater than nature, because, of the two factors, soul is the greatest and most important, and summons nature to its throne and makes use of it. Music is the great living art. No great picture has been painted for two hundred years. Why genius rises in tides every two or three hundred years, and expresses itself in poetry, or painting, or architecture, and leaves the succeeding ages barren of great creative works, has never been explained. At any rate it seems we have not exhausted the dispensation of fifty years ago and have had no burst of poetry since. All is an after-math. No new phase of imaginative feeling.

Critics may judge of art more fairly than artists, for artists are constituted to feel one thing intensely. This prejudices them against other kinds of excellence. The critic may be more impartial and universal if he has sensibility, not being swayed by any predisposition, and not himself gifted with any originating power. He should be sympathetic and interpretative. What he cannot discover must be *technique* and not universal, for art must render itself to the world and not be of a caste or mystery.

It cannot be too much insisted on, art does not depend upon subject. Rembrandt saw subject everywhere, and transmuted the dust to gold. We are getting nearer to nature in all things, life, literature, law, art, manners, religion, sloughing off the accretions of centuries. Science is lending a powerful hand. The age is her's. The American loves adornment, which is a kind of art, and is willing to spend for it. American ladies' instinct for dress is conspicuous while the English are clumsy at it. Our houses are more neatly constructed than in the Provinces.

Allston was the greatest artist we have produced, a man cast in the mould of the old masters but missing his time. Like Coleridge as poet, he was potentially great. Landseer, the greatest English artist of our generation, and the only one of genius, is best seen in prints for his painting is chalky and thin. The English live among animals and should do them well as the Greeks did the human form which they constantly saw, and the Venetians were inspired by the *lagune* around them, and the vicinity and intercourse of the East.

The æsthetic is born in man as early as the religious or intellectual. The savage no sooner begins to beat his neighbor's brains out but he carves his club. He paints his own body for beauty or terror, but it requires a new birth to know beauty intimately as Wordsworth, Shelley, Blake, knew it. We must go behind the conventional, recover the "innocency of the eye," "strip the veil of familiarity from things." Artists interpret, poets make us know it. But among poets and artists there are the supersensuous, and the describers merely. Those who have insight and ideality, and spiritual imagination, and those who never get at the heart, the core, the soul of things; the imaginative significance of the universe, but dwell in the superficies. That it is the province of all art to discover and give. In measure of the revelation of it is it great.

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ANNUAL MEETING, WEDNESDAY, MAY 13, 1874.

ACCORDING to the notification, the meeting was held at 3 P.M. The PRESIDENT in the chair. Records read.

The annual reports of the officers and of the curators were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR

has been compiled. The placing before large and interested assemblages a series of superior entertainments, consisting of instructive lectures and essays, brilliant concerts and exhibitions of flowers, fruit and vegetables, of a high order, has been attended with eminent success. In other directions a like degree of vigor and zeal has been noticeable: thus the library and museum have been largely increased, by purchase, donations, and by exchange; the field, evening and other meetings have been well attended and at these meetings many valuable communications were presented and referred to the appropriate committee for publication.

MEMBERS.—Changes occur in the list of our associates, by the addition of new names, and the withdrawal of some by resignation, removal from the county or vicinity, or by death. In this connection, notices of six of the resident members who have deceased within the year are inserted.

1. *William Oliver Thayer.* Son of Oliver and Rachel (Bancroft) Thayer, of Salem. He had from his youth been an interested member, although his business avocations prevented him from taking an active part in the meetings; he was engaged in the lumber business with his father. Died June 9, 1873, aged thirty-nine.

2. *Richard Saltonstall Rogers*, well known to those of a past generation as an active merchant in the firm of N. L. Rogers & Brothers, who were pioneers and founders, in the United States, of the Zanzibar and New Holland trades; for many years previous to 1842 were actively engaged in foreign commerce, mainly with the East Indies, and were among the most distinguished merchants of Salem. Died June 11, 1873, aged eighty-three years.

3. *Benjamin F. Browne*, known as a druggist and apothecary for many years in this city, and latterly for his interest and zeal in the study of our local history. The results of many of his investigations and researches have been printed in the first volumes of the "Historical Collections" of the Institute, contributing largely to the importance and historical value of this publication. He was the son of Benjamin and Elizabeth (Andrew) Browne of Salem, and was born July 14, 1793. Died November 23, 1873, aged eighty years and four months.

4. *John Jewett*, for many years established in the cabinet making business, and later a partner in the firm of Prime, Kenney & Co. Son of John and Elizabeth (Hodgkins) Jewett, born at Ipswich, Dec. 24, 1795, came to Salem a young man and has since that time been a resident of this city. He was an enterprising and useful citizen; for many years a director in the Commercial (now First National) Bank, a member of the city government, representative to the legislature, and served efficiently in other local capacities. He died Feb. 28, 1874.

5. *Robert Peele*, son of Robert and Elizabeth (Smith) Peele; had during a long life been engaged in the hardware business until a few years since, when he retired. He was always much interested in antiquarian lore and in collecting materials for our local history. He died April 7, 1874, aged eighty years.

6. *Alpheus Crosby*. Widely known as a distinguished scholar and educator; died at his residence in this city, April 17, 1874. He was son of Dr. Asa Crosby, and was born in Sandwich, N. H., Oct. 13, 1810, a graduate of Dartmouth in the class of 1827, and for many years a tutor and professor in that institution. In October, 1857, he became principal of the State Normal School at Salem and continued in that office until July, 1865, and since that time has resided in this city engaged in literary pursuits. Prof. Crosby was one of the most accurate and thorough Greek scholars that our country has produced. He has published several Greek text books that are held in high repute, besides other valuable educational works, and his exhaustive labors upon a new Greek dictionary which he was preparing probably induced the disease of which he died.

Prof. Crosby had always been a valuable citizen. For ten years he had been president of the Salem Athenæum, and had been one of the officers of the Institute, in whose welfare he took a deep interest and whose cause he has advanced by his donations and efforts in other ways.

Two of our corresponding members have deceased, *Prof. L. Agassiz* at Cambridge, Dec. 13, 1873, and *Col. J. W. Foster* at Chicago, Illinois, June 29, 1873. Also *Prof. J. L. Russell*, an early member of the Natural History Society, June 7, 1873. At special meetings held for the purpose resolutions of respect were passed.

[*To be continued.*]

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., JUNE, 1874. NO. 6.

One Dollar a Year in Advance. 10 Cents a Single Copy.

ANNUAL MEETING, WEDNESDAY, MAY 13, 1874.

RETROSPECT OF THE YEAR.

[*Continued.*]

MEETINGS.—During the summer and early autumn *Field Meetings* and *Horticultural Exhibitions* occupied the attention of the Institute. The meetings were four in number, first at Amesbury, on Thursday, June 19, 1873, by invitation of the Amesbury and Salisbury Natural History Club, who were very courteous and attentive during the visit. At the meeting in the Universalist Church the recent decease of Messrs. R. S. Rogers, J. L. Russell and W. O. Thayer was noticed. Mr. Allen W. Dodge, after a few general remarks, alluded to some of the habits and customs of our ancestors gleaned from the records in the registers of probate and of deeds. Mr. F. W. Putnam alluded to some Indian relics belonging to the museum of the Natural History Club, particularly specifying an interesting carved stone rudely representing a porpoise, or better still, a white whale or *Beluga*.

Among the other speakers were Messrs. James H. Emerton, of Salem, Homer B. Crane, William C. Binney, Rev. Messrs. Eaton and Dinsmore of Amesbury.

The second meeting was at Lynnfield, Wednesday, July 30, 1873. The principal points of interest were visited during the forenoon. At the afternoon meeting in the church the recent decease of Col. Foster at Chicago was noticed. Mr. F. W. Putnam, Rev. E. C. Bolles, John Robinson, Rev. S. H. Taft, of Humboldt College, Gen. Josiah Newhall, of Lynnfield, and others, reported on the findings of the day, and made such observations as were suggested thereby.

The third field meeting was at Chebacco Pond, Tuesday, Aug. 12, 1873, by the kind invitation of Messrs. J. Whipple & Sons. The meeting was held on the platform in the grove, and was very largely attended, several distinguished persons being in the vicinity were present, and among the speakers were Hon. A. W. Dodge of Hamilton, George D. Phippen of Salem, Prof. Asa Gray and Prof. George L. Goodale of Cambridge, J. J. H. Gregory, Esq., of Marblehead, Mr. F. W. Putnam and others.

The fourth meeting was at Danvers Centre, formerly Salem Village, the seat of the witchcraft delusion in 1692. The afternoon session was held in the church. Messrs. F. W. Putnam, John Robinson, E. C. Bolles, C. B. Rice, David Stiles, Jeremiah Spofford, Augustus Mudge, W. P. Upham, George Tapley and others addressed the meeting. A communication was presented from Philip P. Carpenter, of Montreal, "On the Generic Affinities of the New England Chitons." (See Bulletin, Vol. v, p. 152.)

Evening meetings have been held at the rooms usually on the first and third Monday evenings of each month.

At these meetings an increasing interest was manifested, and several valuable communications were presented, abstracts of which have been printed in the BULLETIN or reserved for the "Historical Collections." The following may be specified:—"On the Mechanism of the Flight of Birds," by C. J. Maynard, "Notes on the Bird Fauna of the Salt Lake Valley and the Adjacent Portions of the Wahsatch Mountains," by Robert Ridgway, "The Birds of Colorado," by Robert Ridgway; "On Some New Forms of American Birds," by Spencer F. Baird and Robert Ridgway; "Natural History in the Schools," by Byron Groce; "Notices of Several Rare and Interesting Fishes from the Harbors of Marblehead, Salem and Beverly," by F. W. Putnam; "On the Early Days and Rapid Growth of California," by Alfred Peabody; "Notice of the Black Fish shot in Salem Harbor, October, 1873," by F. W. Putnam; "On Art Studies," by Walter Smith; "Notes from the Diary of Wm. Russell, prior to and chiefly during the Time of his Confinement in Mill Prison during the War of the Revolution," communicated by James Kimball; "On Copperplate engraving," by Geo. M. White; "Journal of Rev. Daniel Shute, D. D., Chaplain of the Expedition to Canada in 1758," by James Kimball; "Notes on the Mammals of Portions of Kansas, Colorado, Wyoming and Utah," by J. A. Allen; "On Various Modes of Illustration," by E. S. Morse; "Description of a Skull of a Mound-builder, from Shell Bed on Rock Island," by A. S. Tiffany; "A Familiar Talk on Art Matters," by Edward A. Silsbee. A special meeting was held on Thursday evening, in the Whitfield church, Newburyport, for the reading of the memorial address upon the late Henry Coit Perkins, M. D., an esteemed member of the Institute, by Rev. Samuel J. Spalding, D.D. A special meeting was also held on Tuesday evening, Dec. 16, 1873, to celebrate the destruction of the tea in Boston Harbor, Dec. 16, 1773. On this occasion a paper was read by James Kimball. On Monday evening, Feb. 16, 1874, a reception was given to Rev. Charles Kingsley, the distinguished Canon of Westminster.

LECTURES.—The series of lectures alluded to in the last annual report,* in course of delivery, by Rev. E. C. Bolles, at Danvers, "On the Microscope and its Teachings, and at the rooms of the Institute "On the Microscope," were delivered according to agreement. During the latter part of the autumn and early winter a course of six lectures was delivered in Wenham, two by Rev. E. C. Bolles, two by Mr. F. W. Putnam and one each by Rev. E. S. Atwood and Rev. J. Coit. Also a course of eight lectures at Ipswich, three by Mr. Bolles, two by Mr. Putnam, and one each by Messrs. Atwood and Coit and C. M. Tracy of Lynn. Mr. Bolles has also delivered two lectures each at Gloucester and Manchester and one at Peabody. Richard A. Proctor of London, Hon. Sec'y of Roy. Astron. Soc., gave three lectures at the rooms of the Institute in November, "On Planets," "On Comets and Meteors," and "On the Moon and Stars." Rev. E. C. Bolles gave four lectures on the microscope in the rooms of the Institute on Wednesday evenings, March 25, April 1, 8 and 15 of the present year.

LECTURES AND CONCERTS under the direction of the curators of the department of arts. A series of eight entertainments, with an extra and a supplementary course of three were given in the Mechanic Hall to large and appreciative audiences. 1st, Mon., Oct. 27, Richard A.

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* See Bulletin of Essex Institute, Vol. 5, p. 45.

Proctor, of London, Hon. Sec. Roy. Astron. Soc., subject, "The Sun." 2d, Wed., Nov. 12, concert by the English Glee Club, of New York City. 3d, Mon., Dec. 1, Readings by Prof. George W. Blish. 4th, Mon., Dec. 8, Rev. Newman Hall, of Surrey Chapel, London, subject, "Reminiscences of Mountain Rambles." 5th, Mon., Dec. 22, Prof. W. H. Niles, of Cambridge, subject, "The High Alps." 6th, Mon., Jan. 5, Charles Bradlaugh, M.P., of England, subject, "Republicanism in England." 7th, Wed., Jan. 14, concert by Mr. B. J. Lang, of Boston, with assistants, and the Essex Institute Chorus. 8th, Mon., Jan. 26, concert by Harvard Glee Club of Cambridge. *Extra*, Fri., Jan. 30, Wilkie Collins of London, reading of "The Dream Woman." *Supplementary course*, 1st, Mon., Feb. 16, Charles Kingsley, Canon of Westminster, subject, "Westminster Abbey," his first lecture in America. 2d, Wed., March 18, concert by Adelaide Phillips. 3d, Mon., March 30, a concert by the Essex Institute Chorus.

HORTICULTURAL.—The operations of this department have been very successfully conducted during the past season. Six exhibitions have been held, three devoted to the show of special flowers, the others more general in their character. 1st, on Friday evening, June 13, for the exhibition of several magnificent specimens of *Cereus grandiflora*, *Lilium auratum*, *Philocactus crenatus* (white cactus) and other species of cacti. 2d, Monday and Tuesday, June 23 and 24, the rose show, one of marked excellence. The conservatories also contributed many choice plants. 3d, Monday, July 28, special exhibition, a fine plant of *Eucharis grandiflora*, also Gloxinias, *Lilium auratum*, night blooming cereus and other plants. 4th, Thursday, Aug. 14, continued on Friday on account of the weather, *Caladium argyrites* from D. M. Balch, white oleander from F. Putnam, varieties of Coleus and ferns from Mrs. C. Hoffman. 5th, Wednesday, Sept. 3, a very large and beautiful display of German and French asters from the garden of John Robinson, and a flower of the *Antheoliza prealta* from the Cape of Good Hope, by Alfred Peabody. 6th, the annual, from Tuesday, Sept. 16th to Friday, the 19th, was decidedly fine in every respect, and fruit, flowers and vegetables were exhibited from all parts of the county, though by far the largest portion from Salem and its vicinity. The main hall and the two anterooms on the first floor were used, and all the tables were filled to overflowing. The hall was tastefully arranged and the bright tints of the beautiful flowers and the bold broad or pinnated points of the tropical palms placed at the entrance and down the centre of the hall, produced a highly pleasing effect, which was materially aided by the gentle stream of water from a miniature fountain rippling over a bed of shells and stones, among which were growing ferns and several aquatic plants. This exhibition was, in many respects, the finest ever attempted in this city or its vicinity, and for the beauty of the articles shown it was superior to, and in the attendance it exceeded, any before held under the direction of the Institute.

There have been in some previous years larger displays of fruit, but rarely a show which combined so much that was interesting and attractive, and never one where there had been gathered so fine a collection and variety of plants. The fruit exhibited, especially of pears, was characterized by general and uniform excellence of quality and appearance rather than by mammoth growth or other exceptional peculiarities. Some very fine specimens of the St. Michael pear suggested the possibility of a revival of this variety, the pride of the Salem gardens a half century ago. The show of vegetables was also quite extensive.

The following prizes and gratuities were awarded:—

FLOWERS.

Pot-plants.—First, D. M. Balch; second, Hugh Wilson.

Coleus "Chameleon."—Kernwood.

Hanging Basket.—First, W. H. Gardner; second, John Meiklejohn.

Stand, growing plants.—W. H. Gardner.

Basket cut flowers.—First, W. H. Gardner; second, Miss Alice Beckford.

Gladioli.—First, Francis Putnam; second, D. M. Balch.

Bouquets.—W. H. Gardner.

Floral Design.—John Meiklejohn.

Gratuity.—Mrs. Horner, Georgetown, native plants; Hugh Wilson, and Mrs. J. D. Hammond, garden stands; J. H. Hill, Amesbury, collections; John Meiklejohn, well grown plants.

FRUIT.

Collection pears.—First, Wm. Maloon; second, Charles A. Ropes.

Best plate.—Seckel, T. P. Symonds; Bartlett, G. P. Rust; Beurre Hardy, B. R. Symonds; Duchesse and Louise Bonne, A. H. Hubbard; Flemish Beauty, James Donaldson.

Collection apples.—First, A. B. Woodis, Ropes Farm; second, D. P. Carpenter.

Single Dish.—Baldwin, Charles E. Symonds.

Native Grapes.—First, D. M. Balch; second, C. Higbee.

Best Rogers, No. 15, W. P. Locke: Hartford Prolific, Edwin Verry; Delaware, T. P. Symonds; Foreign (single dish) Chas. R. Waters.

Collection peaches.—First, Geo. Bowker; second, C. M. Richardson.

Single Dish.—Fred. Lamson.

Gratuity.—Peaches, to Mrs. G. W. Downing; Figs, Aaron Smith; collection, H. F. Skerry.

VEGETABLES.

Collection.—First, David Wentzell; second, Geo. W. Rogers; third, City of Salem (farm).

Early Rose potato.—C. S. Emmerton; other varieties of potato, C. S. Emmerton; marrow squash, E. C. Larrabee; tomato (best 12) trophy, E. C. Larrabee; cabbage, F. W. Lyford; tomato (sort not trophy), Plummer Farm School; Beets, A. B. Woodis; Beets (mangels), A. B. Woodis; water melons, Plummer Farm School; Mammoth squash (102 lbs.), David Wentzell, who had two on one vine weighing together 174 pounds. and a fourth 87 pounds.

The prizes awarded on the first day for "cut flowers" were, first, Francis Putnam; second, John Meiklejohn; third, Charles A. Beckford; gratuity to Miss Alice Glover for "tasteful arrangement of flowers."

The contributors were as follows:—

FLOWERS, POT PLANTS. FERNS, BASKETS. ETC.—D. M. Balch, Hugh Wilson, Francis Putnam, George W. Rogers, John Robinson, John Meiklejohn, C. A. Beckford, John Doig, Mabel Emery (Lynn), J. Henry Hill (Amesbury), John Webster, Mrs. Horner (Georgetown), Miss Annie Bancroft, Mrs. J. B. Osborne, Mrs. James

O. Safford, Mrs. W. F. Gardner, Miss C. A. Neal, Miss Grace A. Glover, Mrs. Miller, Miss Alice Beckford, Henry D. Johnson, Miss S. W. Chandler, Mrs. S. H. Smith, William H. Gardner, Mrs. R. Winn, William P. Parker, B. D. Hill (Peabody), Miss Mary T. Ropes, Mrs. Clough, Mrs. David Pingree, C. A. Ropes, Clifford Burnes, C. H. Pulsifer, S. Killam, Dr. G. A. Perkins, Mrs. J. D. Hammond, E. S. Atwood, Mrs. E. D. Kimball.

PEARS, PEACHES, APPLES, PLUMS, GRAPES, ETC.—A. J. Hubbard (Peabody) Mrs. John Goldsmith, W. H. Nichols, Mrs. Walter Leavitt, S. P. Fowler, Mrs. F. L. Ward, V. C. Stowe, J. B. Osgood, Miss Richardson, C. M. Richardson, B. Ballard, J. W. Goldthwait, D. P. Carpenter, George D. Glover, Charles E. Symonds, Mrs. Kimball, R. C. Manning, G. P. Rust, Wm. Maloon, Jona. Davis, George Merrill, Mrs. Edward Lamson, A. P. Weare, Jno. Daniels, Miss H. Short, Thorp Fisher, E. Emmerton, C. R. Waters, Alfred Peabody, Mrs. E. Moore, W. H. Rice, Benjamin Edwards, S. P. Walcott, C. Higbee, Alfred Whalen, L. D. Pettingell, S. W. Bancroft, N. A. Horton, B. R. Symonds, K. Babbage, Mrs. P. English, George A. Newhall, Geo. Bowker, W. B. Aiken, Charles Creesy, T. P. Symonds, Frederick Lamson, J. P. Cooke, James Donaldson, C. H. Buxton, H. F. Skerry, J. Margati, J. R. Chase, C. Harrington, C. A. Ropes, S. G. Jones, Samuel Newman (Peabody), Wm. Hill, J. F. Dodge, M. P. Locke, Aug. Very, G. F. Putnam, F. L. Ward, Thomas Symonds, B. H. Silsbee, D. M. Balch, Mrs. George Downing, Mrs. Henry Webb, C. H. Webber, Mrs. J. Pierce, Mrs. G. A. Newhall, J. Goldsmith, Mrs. Wilkinson, E. H. Dodge, Aaron Smith.

VEGETABLES.—David Wentzell, George W. Rogers, City of Salem, Plummer Farm School, H. W. Lyford, C. S. Emmerton, E. C. Larrabee, L. D. Pettingill, A. B. Woodis, Mrs. Ward, Alfred Ware, W. S. Messervy, B. H. Silsbee, George A. Newhall, John Meiklejohn.

HONEY.—George D. Glover, B. R. Symonds.

LIBRARY.—The additions during the year now closed are as follows:—

Donations.

Folios,	1	Pamphlets and Serials,	4,511
Quartos,	29	Almanacs,	39
Octavos,	333		
Duodecimos,	110	Total,	4,550
Sexdecimos,	67	Total of bound volumes,	540
Total,	540	Total of donations,	5,090

Exchanges.

Quartos,	3	Pamphlets and Serials,	897
Octavos,	110	Total of bound volumes,	115
Duodecimos,	2		
		Total of Exchanges,	1,012
Total,	115	Total of Donations,	5,090
		Total,	6,102

Of the total number of pamphlets and serials, 1,324 were pamphlets and 4,084 serials.

The donations to the Library for the year have been received from one hundred and fifteen individuals and seven societies and public bodies.

The exchanges have been received from ninety-nine societies and incorporate bodies, of which sixty-nine are foreign.

From the editors of the "American Naturalist" fifty-one serial publications.

In this connection the Librarian would state that there is a box or shelf catalogue of the books in the upper hall; an accession catalogue, being a full list of the additions to the library, chronologically arranged, and an alphabetical catalogue of a large portion of the library. A full alphabetical catalogue of all the books and pamphlets would be a great desideratum and would facilitate very much the duties of the students and all others who may have occasion to consult the library. The early attention of the Institute is particularly requested to the consideration of this subject.

The arrangement of the manuscripts has been completed during the past year. All the manuscript papers are now carefully assorted and placed either in bound volumes or in packages, labelled on the back so that any one can ascertain whether any desired manuscript is among them without removing them from the shelves. It would be a great advantage if this arrangement could be kept up with all manuscript papers as they are brought in, for nothing seems more useless than to keep them packed away in closed drawers and in obscure corners out of sight. Our manuscripts are now often consulted by genealogists and others, and much gratification has been expressed at the manner in which a portion of them have thus been made available.

Museum.—Many valuable specimens in Natural History have been given during the year and are on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. Several of these specimens have been mentioned at our meetings as contributing to the knowledge of the natural history of this county. All have been duly acknowledged to the several donors. In addition to the above several interesting specimens of an historical character have been deposited in the rooms of the Institute, and contribute very much to the interest and value now attached to the antiquarian and historical portion of the museum.

Several paintings of considerable merit and other works of art have been presented. These, in addition to those previously in the room of the Institute, will form a nucleus around which ere long it is hoped that a museum of fine arts will be formed, and that the requisite additional accommodations will be furnished by the friends of culture and of art, to enable the Institute thus to accomplish in a fitting manner this long cherished object, or at least to make good progress in this direction.

FINANCIAL.—The Treasurer's Report shows an increase in the annual income; yet additional means are requisite to perform in a fitting manner the various duties which the community may reasonably expect.

DEBITS.

General Account.

Athenæum for rent and Librarian,	$ 350 00
Salaries, $813 64; Coal, $178 00; Gas, 110.86,	1.102 50
Lectures and concerts,	4,097 45
Publications,	1,216 92
Express, $54.88; Postage, $18.58,	73 46
Insurance, $40; Gas Fixtures, $68.50,	108 50
Stationery, $20.64; Printing, $13.92; Collecting, $4.05,	38 61
Sundries,	13 53
Cash to balance,	182 68
Amount carried forward,	$7,183 64

Amount brought forward,	$7,183 64

Historical.

Books, $41.50; Binding, $66,	107 50

Natural History and Horticulture.

Binding, $50; Horticultural exhibitions, $295.47,	345 47
	$7,636 61

CREDITS.

General Account.

Dividends Webster Bank,	$35 00
Assessments, $1,275; Publications, $447.22,	1,722 22
Miscellaneous, $35.76; Life Memberships, $60,	95 76
Athenæum, proportion of coal, and janitor,	164 00
Lectures and concerts,	4,594 74
Cash at beginning of year,	202 42

Historical.

Dividends Naumkeag Bank,	20 00

Natural History and Horticulture.

Div. Port., Saco and Ports. R. R., $20; Lowell Bleachery, $72,	92 00
Horticultural Exhibitions,	330 47

Davis Fund.

Coupons Burlington and Missouri River R. R. Bonds,	140 00
Coupons Dixon, Peoria and Hannibal R. R. Bonds,	240 00
	$7,636 61

PUBLICATIONS.—The BULLETIN has been continued in monthly numbers, giving full reports of the doings of the Institute and abstracts of the papers read at the meetings; this makes an annual volume of from one hundred and seventy-five to two hundred pages. Vol. xii, Nos. 1 and 2 of the "Historical Collections" have been printed; it is expected that Nos. 3 and 4, completing the volume, will be issued during the present year, 1874.

During the year two schools from one of the towns of the county have visited the city for the purpose of enabling the scholars to see the valuable and instructive collections that our cabinets contain. This certainly carries out one of the first objects of the society, the dissemination of scientific and useful knowledge in the county of Essex, and it is desirable that this method be continued.

Hastily running over the year's work, we find the society in as prosperous a condition as ever before, and a decided success has attended the duties of each of the departments, divided among more persons and giving each the opportunity to do their part greater justice. But diverse as are the departments of the society, it must not be forgotten that there is underlying a grand object to be consummated by the operations, that besides working to make any department a success, or to form a great library or collection, we are to do our share towards keeping up the standard that is expected of every New England city, morally, socially and scientifically.

OFFICERS ELECTED

for the year ensuing and until others shall be chosen in their stead:—

President.

HENRY WHEATLAND.

Vice Presidents.

Of History—A. C. Goodell, Jr. *Of Horticulture*—William Sutton.

Of the Arts—D. B. Hagar. *Of Natural History*—F. W. Putnam.

Recording and Home Secretary.

John Robinson.

Foreign Secretary.

A. S. Packard, Jr.

Treasurer.

Henry Wheatland.

Librarian.

William P. Upham.

Superintendent of the Museum.

Caleb Cooke.

Curators of Historical Department.

W. P. Upham, M. A. Stickney, John Robinson.

Curators of Natural History Department.

H. F. King, G. A. Perkins, William Neilson.

Curators of Horticultural Department.

Caleb Cooke, D. M. Balch, W. P. Andrews.

Curators of Department of the Arts.

C. H. Higbee, James A. Gillis, George M. Whipple.

Lecture Committee.

James Kimball, George Perkins, William Northey, E. C. Bolles, A. H. Johnson.

Finance Committee.

John C. Lee, Jas. Upton, Geo. D. Phippen, Jas. O. Safford.

Field Meeting Committee.

A. W. Dodge, E. N. Walton, Caleb Cooke, N. A. Horton, Alfred Osgood.

Library Committee.

J. G. Waters, E. B. Willson, Geo. F. Flint.

Publication Committee.

A. C. Goodell, Jr., F. W. Putnam, R. S. Rantoul, Henry M. Brooks, E. S. Atwood.

William Agge, of Salem, was chosen a resident member.

Mr. F. W. PUTNAM exhibited a fish spear found in a field in Danvers and presented to the museum by Mr. W. A. Brookhouse, of Danvers.

Rev. E. B. WILLSON announced his memoir of the late John Lewis Russell as ready for publication; referred to the committee on publications.

Adjourned.

REGULAR MEETING, MONDAY, MAY 18, 1874.

MEETING this evening at 7.30 o'clock. The President in the chair.

CHARLES C. PERKINS, Esq., of Boston, after an introduction by the President, said that he cheerfully responded to an invitation from the Essex Institute to give

A TALK UPON ART.

He was glad that the society had entered into this field, and that exhibitions were in prospect and that an art museum was contemplated. After a few introductory remarks, he contrasted the technically perfect, but priest controlled and conventional art of Egypt, with the free, outspoken, ideally beautiful art of Greece; pointed out the undoubted influence of the east upon early Greek art, and traced its history from rude beginnings to the perfect conclusions of the Periclean period. After Greece was enslaved and despoiled by the Roman generals, art took up its abode on the banks of the Tiber, and heightened the splendors of the imperial city. A Greco-Roman school flourished there for a time, and after gradual decay died out altogether in the fourth century, when Constantine transplanted the seat of the empire to the shores of the Bosphorus, taking with him the best artists, artificers and builders to embellish his new Capitol. Oriental influences, working at Constantinople upon Greco-Roman traditions, brought thither by the followers of Constantine, produced the Byzantine school. This reacted upon Italy through Ravenna, the capital of the Exarchs, and through the Greek artists who took refuge there from the rigors of the Iconoclastic war in the eighth century, and those who followed them in the twelfth.

The successive invasion of the Italian peninsula by the

Goths (who had no art of their own, but who, through their king, Theodoric, protected the remains of ancient art from destruction), and of the Lombards (whose queen Theodelinda employed Italian architects, sculptors and painters to build and decorate the Basilica and Royal Palace at Monza), kept art traditions alive. These were further sustained by the Comacine masters, a body of Free Masons to whom the Lombards granted special privileges, and by the patronage and encouragement given by Pope Hadrian, and his friend the emperor Charlemagne, at Rome. During the Lombard period, Italian art, such as it was, was influenced by the east through Ravenna, where Byzantine artists built and decorated the splendid Basilicas of San Vitale, S. Apollinare, etc., etc., with mosaics; by Rome, which asserted her never dying power through the permanence of those classical traditions which continued all through the dark ages to assert their strength, in the architectural style known as the Romanesque or debased Roman, a style that yielded only partially to the Gothic (which never got a firm foothold in the Italian peninsula) and in that revival of classic elegance in the arts and letters called the Rennaissance, which began about the middle of the fourteenth century, and culminated in the fifteenth.

Before the year 1000 the end of the world was anticipated, the arts had declined to the lowest pitch of degradation. From this they were raised in the thirteenth century by Niccola Pisano, the true father of the revival of architecture and sculpture, by Cimabue, who began the emancipation of painting from Byzantine thraldom, and by the great Giotto, who died in 1336, after having founded a school of religious art whose mystical element was developed to the highest degree by the saintly Fra Angelico in the early part of the succeeding century.

The recovery of the long buried art treasures, the formations of collections of ancient gems and marbles, by the Medici and their contemporaries, the passionate love of the antique in all forms which distinguished the Rennaissance period, then combined to produce a golden age, which found its chief centre at Florence. Here Brunelleschi, Ghiberti, Donatello and Masaccio lived and worked, and produced masterpieces of architecture, sculpture and painting. These artists shed a lustre upon the reign of Cosmo de Medici, as did Leonardo de Vinci and Fra Bartolomeo and Michel Angelo upon that of Lorenzo the Magnificent.

To Michel Angelo and Raphael, in whom the glories of Italian art culminated, the lecturer could only allude in the brief time at his disposal, but he concluded with an offer to speak of them at fitting length at some future time, if desired.

Many of the illustrations were of the world famous pictures, statues, frescoes, bronzes, sarcophagi, etc., in the renowned art museums, churches and other depositories of art in Italy and Germany, and were very perfectly presented by the aid of the calcium light under the skilful manipulation of Mr. J. W. Black, of Boston. The progress of art from the earlier of the great masters to Raphael and his compeers were traced very instructively, and the characteristic differences of the masters of the several schools and periods were briefly but comprehensively described.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., JULY, 1874. No. 7.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT IPSWICH, WEDNESDAY, JUNE 3, 1874.

THE first field meeting, the present season, took place this day in the town of Ipswich, most of the party going in the first, and others taking some of the later trains. It is now several years since a field meeting has been held in this old shire town, formerly the place where several of the courts held their regular sessions each year. The county buildings are now confined to the house of correction and the county insane institution, on the banks of the Ipswich river—the old court house having been taken down, and the old probate court house having since been given over to Odd Fellowship and the public postal service. Some forty years since, when the old stage coach was the only public conveyance, the town had two public houses, with one or two of lesser note, which is more than can be summed up at the present day. Ipswich has a public library, the gift of the late Mr. Augustine Heard. Though this one is a comparatively modern institution, semi-public libraries are not altogether new to the town, which possessed a "social library" as early as 1791, and later a few others of less importance. The Ipswich Female Seminary,* for thirty years under the care of Rev. and Mrs. J. P. Cowles, has been long a celebrated and well known educational institution. One of the most substantial public works in the town is the Choate Bridge across Ipswich river, which was built of stone in 1764, and cost one thousand pounds, one-half paid by the town, the other by the county; named for Hon. John Choate, who was on the committee and superintended the erection. It is strong and neat, having two arches, with one solid pier in the bed of the river.

Among the churches in the main part of the town are two Orthodox Congregational, one Methodist, and an Episcopalian. The woollen and hosiery business is the leading industry of the town (at least of a mechanical nature) and all appear to be prosecuted with success.

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* The Ipswich academy commenced in 1826. A company of gentlemen erected the building, who became incorporated in February, 1828. The first teacher was Rev. Hervey Wilbur, who continued about one year, and was succeeded by Mr. James W. Ward, who was the instructor from May, 1827, to March, 1828. During the above period the school was open to children of both sexes.

Miss Zilpah P. Grant, assisted by Miss Mary Lyon, previously in charge of an academy in Derry, N. H., took the school and by their joint and indefatigable labors soon built up one of the most flourishing and popular female seminaries in New England. Miss Lyon left Ipswich in 1834 to found a permanent academy for females, with buildings, library, apparatus and endowments. After three years of unsurpassed effort she succeeded in establishing the school at South Hadley, now known as the Mount Holyoke Female Seminary, which was opened Nov. 8, 1837, and Miss Lyon was in charge until her death, which occurred March 5, 1849.

Miss Grant retired in April, 1839, and two and a half years later was married to William B. Banister, a lawyer in Newburyport. She is still living at Newburyport, a widow, aged 80, in good health.

Miss Mary E. Ellison, a teacher in Prof. Abbot's school in Boston, and for some time previous principal of a seminary at Plymouth, N. H., was appointed to succeed Miss Grant. She afterwards married Rev. Dr. Dimmick, of Newburyport, and is still living, a widow, at Newburyport. Miss Little at first was substitute and afterwards Miss Yeaton succeeded Miss Grant in the direction of the school, the three together were there only three years. The school was then closed until May, 1844, when the present principals, Rev. John P. and Mrs. Cowles, entered upon their duties. Mr. Cowles, Jan. 29, 1849, purchased the land and buildings, and the corporation was soon after dissolved. The school is a private institution under the corporate name.

The party found something to interest them in the general characteristics here mentioned, and various groups wandered forth in different directions, some in rambling over the hills in search of flowers, in visiting the library and the old burying ground; a few went down the river in boats to explore the shell heaps near the light-house and in the marshes adjoining.

Lunch was served in the town hall at half-past one, at which the young ladies of the seminary kindly and gracefully volunteered their services.

At 3 P.M. a meeting was held in the First Church. President in the chair.

In the absence of the Secretary, Mr. F. W. Putnam was requested to act. Records read.

The acting Secretary announced the following correspondence: —

From F. E. Abbot, Boston, May 9, 15; William P. Andrews, May 16; George L. Balcom, Claremont, N. H., May 21; N. Cleaveland, Westport, Conn., March 24; Henry B. Dawson, Morrisiana, N. Y., Feb. 23; Samuel E. Dawson, Montreal, May 6; D. C. Gilman, Oakland, Cal., May 21; Frank E. Hotchkiss, New Haven, Conn., May 4, 18; Rufus King, New York, May 26; Thomas Morong, Ipswich, May 27; William Neilson, May 15; William Northey, May 14; Ogden & Brooks, New York, May 26.

The Librarian reported the following additions: —

By Donation.

Abbot, Francis E., Boston. The Index for 1870, 1871, 1872, 1873. 4 vols. folio.

Appleton, W. S., Boston. Genealogy of the Appleton Family. 8vo pamph. Boston, 1874.

Brooks, W. G., Boston. Miscellaneous pamphlets, 14.

Gilman, D. C., Oakland, Cal. Biennial Report of the Regents of the University of California, 1872–73. Proceedings of the Agassiz Memorial Meeting, Dec. 22, 1873, at Mercantile Library Hall. Remarks of Prof. D. C. Gilman on Louis Agassiz as a Teacher of Science in America.

Greene, Sam'l A., Boston. Miscellaneous pamphlets, 23.

Hunt, T. F. Christian Family Casket, 1846. 1 vol. 8vo. Family Circle, 1849. 1 vol. 8vo. Miscellaneous volumes, 4. Overland Monthly, 47 numbers. Miscellaneous pamphlets, 11.

Johnson, Samuel. A Discourse delivered at the Parker Memorial Meeting House, March 15, 1874, by donor.

Mass. Society of the Cincinnati. Memorials of the. 1783–1873. By Francis S. Drake. 1 vol. 8vo. Boston, 1873.

MORSE, E. S. Miscellaneous pamphlets, 6.

PICKERING, CHARLES, of Boston. U. S. Exploring Expedition for 1838. 1839, 1840, 1841, 1842. 1 vol. 4to. Boston, 1863.

U. S. SURGEON GENERAL'S OFFICE. Catalogue of the Library of the Surgeon General's Office. 3 vols. 4to. Washington, 1874.

WATERS, J. LINTON. Miscellaneous pamphlets, 6.

U. S. PATENT OFFICE. Official Gazette, Apr. 14, 21, 28, May 5, 12, 1874.

By Exchange.

BOSTON PUBLIC LIBRARY. Superintendent's Monthly Report for April, 1874.

BOWDOIN COLLEGE. Seventy-second Annual Catalogue for 1873–74.

MINNESOTA HISTORICAL SOCIETY. Collections of. Vol. iii, Pt. ii, 1874.

N. E. HISTORIC-GENEALOGICAL SOCIETY. Memoir of Hon. Edmund P. Tileston. By E. Holden. Boston, 1874.

PHILADELPHIA ACADEMY OF NATURAL SCIENCES. Journal of. New Series, Vol. viii, pt. I. April, 1874.

PHYSIKALISCH-MEDICINISCHE GESELLSCHAFT IN WÜRZBURG. Verhandlungen, Neue Folge, v Bd. 4 Heft. 1874.

SOCIÉTÉ MALACOLOGIQUE DE BELGIQUE. Annals, Tome vi, vii. 1871-72. 2 vols. 8vo. Procès-Verbaux Des Seances de la. Tome ii, 1873. 1 vol. 8vo.

SOMERSETSHIRE ARCHÆOLOGICAL AND NATURAL HISTORY SOCIETY. Proceedings for the year 1872.. Vol. xviii. 1 vol. 8vo. Taunton, 1874.

PUBLISHERS. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem City Post. Salem Observer.

The PRESIDENT, in alluding to the pleasant rambles about this ancient town and the several places of interest, some to the student of nature and others to the local historian and antiquarian, said that many Salem people had sprung from Ipswich, and consequently were always gratified in revisiting the old homesteads where their ancestors had resided years long since, and whose remains are in the old cemeteries. He mentioned several donations to the museum, specifying a fine specimen of *Pecten magellanicus* taken at Beverly Bar a few days since by Laban S. Osborne, of Salem, and called upon

Prof. E. S. MORSE, of Salem, who gave an account of this pecten, a rare species on the shores of Essex county, describing the anatomical structure and comparing the same with other mollusks. The special subject of Mr. Morse's remarks was particularly upon the aid afforded. by insects to the process. The bee seeks the flower for honey, which it is commonly supposed is placed there merely to afford him his food. On the contrary, the honey, or rather nectar—for honey, correctly speaking, is the nectar of the flower taken into the stomach of the bee, where it undergoes a change and is then regurgitated—is a sort of reward for the help the bee has rendered the plant. Many, indeed recent investigations show that most flowers could not be fertilized, hence could produce no seeds, and consequently the species would cease to exist without the help of insects. The floral organs and their functions were shown and illustrated by drawings upon the blackboard. The stigma, or top of the central organ, the pistil, must receive the fine fertilizing dust, the pollen, from the stamens, or the fruit or seed at the bottom of the flower cannot be perfected. This dust fertilizes the ovaries in which the seeds form. In some flowers the stamens and pistils are quite near together, in others the pollen placed in such a position that it could never reach the pistil without the help of insects. The bee or insect is attracted by the odor of the nectar, and in searching for it, brushes rudely against the stamens and carries the pollen away upon its body, and going to another flower chances to touch the stigma, and so leaves it where it will fertilize the seed. In the laurel the stamens are pressed within the petals and only dislodged by force, when they spring out with a snap and touch the pistil in the centre of the flower. Insects supply this force. In some flowers the pistil, or fruit-bearing organ, makes its appearance one day, and withers away, and the pollen does not come until the day following, quite too late to be of any use in fertilizing. If all the plants of this species flowered on the same day it would speedily become extinct, but they blossom upon different days, and insects convey the pollen of one to the pistil of another. In some plants the relative size of the organs varies in different individuals so much that they almost seem to belong to different species, and this facilitates the work of the insects. An example of an orchid was given, which has a nectary like a tube five or six inches long, with a drop of nectar at the bottom; at the top, upon a broad petal, are two small button-like projections, which are the pistils, but the stamens are nowhere visible. The pollen is found in little pockets on the opposite side of the petal, connected with the button by a thread running through. This flower could never be fertilized without the action of insects. The nectary is long and narrow and it is only a certain large and brilliant species of moth, which uncoils its long tongue and in reaching the nectar strikes with its head the little buttons at the top of the tube, and as they are covered with a sticky substance, bears them away upon its head, with the thread and packet of pollen attached. As these threads dry they bend forward, and are just in position to touch the stigmatic surface upon the next flower he visits. The help of insects is necessary even where the organs are near each other in the same flower, for Darwin has found by investigation that in many flowers self-fertilization is impossible; the pollen to be efficient must be carried to the pistil of another flower. All flowers having a bright colored corolla, or fragrance, are fertilized by insects. Others, and those like the pine, having staminate and pistillate flowers on different trees, are fertilized by the action of the wind. The insects visit only the most brightly colored and perfect flowers of a species, hence these only bear seed and so the principle of natural selection is constantly operating.

Prof. Morse gave some facts concerning what might be called carnivorous plants, those which absorb and assimilate the juices of insects, and even of pieces of meat. The leaf of the fly-trap has a row of spines on the edge, and some fine hairs at the centre, with a substance attractive to insects upon them. As soon as an insect touches these hairs the leaf closes, the spines interlock and hold him a prisoner. The same action is observed on touching the hairs with a piece of meat. Other plants present similar phenomena. This was a new field of investigation and might lead to important results.

For the above facts he gave full credit to Darwin and Gray, referring also to the observations of Mrs. Treat.

Vice President F. W. PUTNAM was next introduced, and gave an account of the shell heaps at the light-house and at Eagle Hill, and alluded to the remains of the various animals that had been found in these deposits. He appealed to the residents of Ipswich who perhaps may explore the heaps, to be watchful for human bones, as the late discoveries by Prof. Wyman in the shell heaps in Florida had proved that cannibalism existed there, and perhaps it may be found that our New England Indians also were given to feasting on human flesh, though, as yet, it had not been proved that they were guilty of that practice.

Mr. Putnam then gave an account of a singular fish that had recently been presented by the Proctor Brothers of Gloucester. This fish, which had been named by Bloch, *Chauliodus Sloani*, heretofore had been found only in the Mediterranean. The present specimen was taken from the stomach of a cod caught on George's Banks, and was a most interesting addition to our fauna.

Rev. THOMAS MORONG, of Ipswich, gave a brief history of the public library in Ipswich, the gift of Augustine Heard, Esq., and paid a deserved tribute to the public spirit and generosity of its founder.

Mr. Heard, son of Hon. John Heard, was a native of Ipswich, and was born March 30, 1785. He was for many years a shipmaster and a tea merchant at Hong Kong, China, in which business he acquired a large fortune. He established the house of Augustine Heard & Co., in China, which has been continued by his nephews in his name and at present is one of the richest and most prosperous in the China trade.

After his retirement from business he gave much attention to benevolent objects, and for years it had been his intention to make some substantial gift to the place of his nativity. Finally it assumed the shape of a public library, which he thought would be most useful to his fellow citizens. With this purpose in view he planned the building which stands near by. It was completed in the autumn of 1868. Mr. Heard lived just long enough to see its completion and transfer it to the board of trustees* appointed by himself. He died at his residence in Ipswich, Sept. 14, 1868, aged 83 years, unmarried.

The building (50 by 40 feet) is two stories in height with a main room for books below and a reading room and a picture gallery above. It was dedicated to public use on Tuesday, March 9, 1869. Addresses were made on the occasion by George Haskell, chairman of the board of trustees, Rev. J. P. Cowles and Rev. Thomas Morong.

The land, building and library cost about fifty thousand dollars; to this Mr. Heard added a fund of ten thousand dollars, the income of which pays the running expenses, making the sum of sixty thousand dollars, which a generous donor bestowed upon the town as a free public library. As modest as he was generous, he forbade its being called after his own name; and so it is known only as the "Public Library of Ipswich." The use is open to all the inhabitants of Ipswich on very simple conditions.

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*Trustees are Zenas Cushing, Joseph Ross and George Haskell.

Mr. Heard put in the building a library of thirty-five hundred volumes of well selected, standard works. To this number his heirs added after his death twenty-five hundred volumes, which, with about thirteen hundred volumes bestowed by another donor, make seven thousand, three hundred volumes, constituting the present library.

The only lack in this donation was the means of increasing the library and of replacing the books worn out, but this deficiency has been recently supplied by another son of Ipswich, Prof. Daniel Treadwell,[*] of Harvard University. Prof. Treadwell had long contemplated the erection of a public library in Ipswich, and had made a will to that effect, when he found himself anticipated by his friend, Mr. Heard. Accordingly he altered it and made his donations to the Heard library. By his death in 1872 the trustees[†] have come into the possession of funds amounting to about ten thousand dollars, which will eventually be raised by residuary legacies to nearly twenty thousand. In addition to this Prof. Treadwell bequeathed his library of about thirteen hundred volumes, a number of valuable oil paintings, copies of the old masters, various medals bestowed upon him for mechanical inventions, coins and models and all his manuscripts, to the library.

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[*] Daniel Treadwell was born at Ipswich in 1791. Rumford Professor and lecturer on the application of the sciences to the useful arts in Harvard University from 1834 to 1845. Died at Cambridge, Feb. 27, 1872.

[†] The Trustees of the Treadwell fund are the Trustees of the Public Library, the pastor of the First Church and the master of the Grammar School, Ipswich. The latter two, at present, are Rev. Thomas Morong and Issachar Lofavour.

By this timely endowment the means are supplied for the indefinite increase of the library, or the establishment of a natural history collection or for any other literary or scientific object which may be advantageous to the intellectual growth of the town.

Already the benefits of the library are beginning to be manifested, as on the average eight thousand volumes are yearly drawn out and read by the inhabitants.

Historical documents, and books connected with family and town records, are finding their way into the library; and it is hoped that deposits of this kind will multiply until all those invaluable treasures, which are in the possession of old families and liable to perish, will be placed where they will not only be safe, but accessible to future historians.

Mr. Morong in the course of his remarks alluded to other funds held in trust for educational purposes, the availability of which is much lessened in consequence of the terms and conditions of the same.

Dr. **Wheatland** followed Mr. Morong and spoke of the importance of inserting a clause in instruments of trust created either by bequest or otherwise, for public uses, prescribing the terms for modifying the conditions so as to meet the wants of those to whose uses the same may have been established, and cited several instances corroborative of the statement of the previous speaker, on the impaired usefulness of several trust funds for educational purposes.

The following vote of thanks was offered by Mr. Putnam, and after being seconded by Mr. Kimball, was unanimously adopted: —

Voted, That the thanks of the Essex Institute be tendered to the proprietors of the First Congregational Church for the use of their building, in which to hold this meeting, to the selectmen of the town of Ipswich for the use of the town hall, to the Rev. Mr. Morong, the young ladies of Mrs. Cowles' school, and to other friends for their kind attentions and courtesies shown to the Institute this day.

Remarks were then made by Mr. Morong, after which the meeting adjourned to meet on the next day at noon, in the rooms of the Institute.

◆

REGULAR MEETING, MONDAY, JUNE 15, 1874.

MEETING this evening at 8 o'clock. The PRESIDENT in the chair.

The propriety of taking suitable notice of the centennial anniversary of the meeting of the legislature of Massachusetts in Salem, Oct. 7, 1774, and resolving themselves into a provincial congress was brought to the notice of the meeting, and, after some discussion, on motion of Mr. James Kimball it was

Voted, That a committee of three be appointed to consider the subject and to report at the meeting on Monday, July 6.

Messrs. JAMES KIMBALL, A. C. GOODELL, Jr., and W. P. UPHAM were appointed. The PRESIDENT was afterwards added.

James W. Lyon, of Salem, was elected a resident member.

Adjourned.

FIELD MEETING AT TOPSFIELD, THURSDAY, JUNE 18, 1874.

THE second field meeting of the season was held this day. The shower of the early morning induced many to infer that the meeting would be postponed, and for this reason the number in attendance was not so large as usual; but in that respect only was it inferior to the customary gatherings on such occasions. An extra train was courteously furnished by the Eastern railroad to take the party to Danvers, at which place a connection was made with the Danvers and Georgetown (under the management of the Boston and Maine) railroad, and upon arrival at Topsfield a cordial welcome was extended by the citizens. Several carriages were in waiting to convey parties to the various points of interest, and guides were in readiness to direct attention to such localities as would be attractive to visitors. The village is situated upon a level plain, entirely surrounded by hills, and the views from any one of them are beautifully picturesque and charming. There are many ancient buildings in the town that were the homes of historical characters, or were the scenes of prominent events of more or less historical importance. Hood's pond is a lovely sheet of water, and its shores attracted considerable attention. Ipswich river, which passes through the town, is a beautiful stream, and upon its waters or borders one small party spent all the time devoted to the rambles. The old Capen House was an object of interest, and its old style of arrangement and finish was examined as a curiosity. Also the old Gould house (now a barn) owned by Frederick Elliott, which is probably more than two hundred years old, older, even, than the one previously named. Its huge oak timbers (13 by 16 and 8 by 15 inches), the brick lined walls and the old-fashioned lathing were well preserved. A passing call upon Mr. Francis Curtis, whose store of skulls, skeletons, skins and Indian relics was interesting; and a visit to the old copper mine, worked experimentally but not successfully, were among the attractions noticed by the party, who made a circuit through the edges of Boxford and Danvers. The old cemetery was visited by many; in this enclosure lie the remains of a large number of men who are distinguished in our annals. The grave of Hon. Asahel Huntington, ex-president of the Essex Institute (1861–1865) is in this cemetery, and the members felt a deep interest in it on that account. The new town hall, when completed, will be a most convenient municipal building, and a great ornament to the town.

The several parties, returning by noon, partook of their collation in Union Hall, where an abundant supply of tea and coffee was furnished by the good people of the town.

The afternoon session for the reports and addresses was held in the Methodist church, and the citizens attended in goodly numbers. The President, H. WHEATLAND, in the chair. In the absence of the Secretary, Mr. Robinson, Mr. N. A. HORTON was elected secretary *pro tem.* Records read.

The SECRETARY announced the following correspondence:—

From Charles H. Baker, Annapolis, Md., June 15; C. J. P. Floyd, Topsfield, June 15; Rufus King, New York, July 10; H. W. Lowry, Cincinnati, Ohio, June 9; Ogden & Brooks, New York, June 9; D. Perkins, Cleveland, Ohio, June 1; Charles W. Richardson, June 10; George Russell, Boston, June 12 and 13; Jacob H. Studer, Columbus, Ohio, June 5; Augsburg, Naturhistoricher Verein, Feb. 20; Buffalo Historical Society, June 10; Boston Athenæum, June 6; Danzig, Die Naturforschende Gesellschaft, Jan. 19; Darmstadt, Verein pers Erdkunde, April 1; Hague, The Entomological Society of the Netherlands, Sept. 26, 1873; New Jersey Historical Society, June 5, 9; New York Historical Society, June 10; New York State Library, Albany, June 15; Ohio Historical and Philosophical Society, June 8, 11; Rhode Island Historical Society, June 6; Rega, Der Naturforsher, Verein, Oct.

31, 1873; U. S. Department of Agriculture, June 11; Washington Smithsonian Institution, April 18, May 2; Worcester Lyceum and Natural History Association, June 6.

The LIBRARIAN reported the following additions:—

Columbus, Ohio, its History, Resources and Progress. By J. H. Studer. 1 vol. 8vo.

The Symmes Memorial. By John A. Vinton. 1 vol. 8vo.

By Donation.

BOSTON ATHENÆUM, Catalogue of the. 1807-1871. Pt. I. 1 vol. 4to. Boston, 1874.

KIMBALL, JAMES. Columbian Centinel for 1793, 1794, 1794-5, 1795-6, 1796-7, 1797-8, 1798-9. 7 vols. folio.

OFFICE OF THE CHIEF OF ENGINEERS. Report of the Sea-Water and Exposure upon the Iron Pile Shafts of the Brandywine Shoal Light House. By John D. Kurtz and M. R. Brown.

PALFRAY, C. W. The Phila. Inquirer, 1871, 72, 73. The Knickerbocker Magazine, 52 numbers. New England Magazine, 37 numbers. U. S. Service Magazine, 16 numbers. Miscellaneous Serials, 12.

SMALL, A. D. Boston Journal of Chemistry. Vols. 3, 4, 5. 1868-71. Annual Reports of the Redwood Library and Athenæum, 1870, 1871, 1872.

U. S. NAVAL OBSERVATORY. Instructions for Observing the Transit of Venus, Dec. 8-9, 1874.

U. S. PATENT OFFICE. Official Gazette for May 26, 1874.

WILDER, M. P., Boston. Proceedings of the Fourteenth Session and Quarterly Centennial Celebration of the American Pomological Society held in Boston, Sept. 10, 11, 12, 1873.

WILLIAMS, Mrs. C. F. U. S. Coast Survey, 1852, 1854. 2 vols. 4to. Subscribers to the Life of Geo. Washington. 1 vol. 4to. Remarks on the Navigation to the China Sea. 1 vol. 4to. Grammar of the Malay Tongue. 1 vol. 4to. London, 1800. Columbian Centinel, 1797, 1801, 1802, 1803, 1804, 1805, 1806, 1807. Christian Register for 1821. 1 vol. folio. American Pilot. 1 vol. folio. Maps. 3 vols. folio. Mariner's Guide. 1 vol. 12mo. London, 1765. The Sepoy Revolt. 1 vol. 8vo. The Shipowners' and Shipmasters' Directory. 1 vol. 8vo. London, 1847. Directory to the Port Charges of Great Britain and Ireland. 1 vol. 8vo. Weston's Complete Merchant's Clerk. 1 vol. 8vo. London, 1762.

By Exchange.

AMERICAN ACADEMY OF ARTS AND SCIENCES, Boston. Proceedings of the. New Series. Vol. I. May, 1873-May, 1874. 1 vol. 8vo.

HISTORICAL SOCIETY OF PENNSYLVANIA. History of New Sweden. By Israel Acrelius. Translated from the Swedish by Wm. M. Reynolds, D.D. 1 vol. 8vo. Phila., 1874.

PUBLISHERS. American Journal of Science. American Naturalist. European Mail. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem City Post.

The **President**, in his opening remarks, alluded to previous visits to this place, the first in April, 1834. The meeting was held in the Topsfield hotel, which stood on the Newburyport turnpike and was of considerable importance in the days of the old stage coach. On this occasion the organization of the Natural History Society, the parent society of the Institute, was completed, and may thus date the commencement of its active duties. The second in June, 1856, in the Topsfield Academy, and this suggests the propriety of having an historical account of this institution prepared and printed in the publications of the Institute. Is there not some one who will undertake this work? The third in 1860 and the fourth in 1868 in the church in which we are now assembled. In coming to Topsfield we therefore come under peculiar relations, somewhat as a graduate from one of our educational institutions returns to his *alma mater*.

In mentioning the recent donations to the museum, several having an historic interest, he also suggested the importance of collecting all relics which illustrate the characteristics of earlier times, and particularly pamphlets and manuscripts.

Rev. **James H. Fitts**, of Topsfield, was then called upon, and read some extracts from a paper which he had prepared, and which will be presented to the Institute, giving an account of "Robert B. Thomas, the maker of the Farmer's Almanac."

Mr. Fitts was formerly a resident of West Boylston, the home of Mr. Thomas, and the paper gave many interesting incidents of the Thomas family and of the profession of almanac making. He alluded to the competition existing between the publishers of Isaiah Thomas's New England Almanac and R. B. Thomas's Old Farmer's, showing that the publishers in the last century were not impervious to personal claims to popular favor.

> "How sad to think that now as then,
> The printers quarrel just like men!"

Mr. Fitts exhibited a complete file of the almanac from 1793 to the present year, remarking that several of the earlier numbers are exceedingly rare, and that of the year 1793 commands as high a price as ten dollars per copy. Isaiah's last number is dated 1803, although the series was continued by successors until 1822. Robert B. had been a school teacher and a book-binder previous to 1793, but from the commencement of his almanac he devoted almost exclusive attention to that. He died May 19, 1846, aged eighty years, and the work he had carried on for half a century is still continued in his name, Messrs. Brewer & Tileston being the present publishers. Mr. Thomas was a man of generous impulses; a hall erected by his bounty bears his name, and West Boylston people are proud of inviting strangers to visit Thomas Hall as one of the local "lions" of their town.

Mr. N. A. HORTON was reminded of a little story, and related the incident. During a long period of drought one season, people complained that the weather predictions of the Old Farmer's Almanack were not reliable, when one of the advocates of the old favorite explained that Mr. Thomas merely said, "Rain *may be expected* about this time," and he claimed that that was the fact, thus flooring the impudent detractor.

Dr. JEREMIAH SPOFFORD, of Groveland, gave some curious personal recollections of the Old Farmer's Almanack, dating back to his childhood, fourscore years ago.

Mr. **Samuel Todd**, of Topsfield, was called upon, and he described a neighboring high ridge of red gravel, bowlders and clay, bringing forward additional proofs (besides what he had advanced on a previous occasion) to the effect that this was a deposit brought hither on drifts of ice, and not a deposit in place.

Vice President F. W. **Putnam** described the fishes taken from Ipswich river, all representing one great group, including the pickerel, the sucker, the shiner, and the chub, and pointed out the characteristic differences of the several forms. He also described the wasp, and its habits in building nests and propagating and feeding the young, illustrating his remarks by nests collected.

Several Indian implements were placed upon the table, and Mr. Putnam also spoke upon that subject. A fine Indian mortar made of stone and found in Topsfield was presented by Mr. Samuel Todd.

Mr. B. P. **Adams**, of Topsfield, presented a curiously wrought specimen of stone, recently discovered at the town farm, remarking that it differed materially from the more common specimens in this vicinity, and requested Mr. Putnam's opinion of its origin.

Mr. Putnam said it seemed probable that this was an ornament or insignia of official position among the aboriginal dwellers of our continent, but this peculiar form is more frequent at the west, among the relics of the Mound-builders, than here at the east.

Mr. **Charles J. Peabody** gave a brief history of Topsfield, whose Territory was once in possession of the Agawam Indians. He narrated incidents from the early settlement here by whites in 1639, down to modern times, alluding to the organization of the town under its present name, copied from the Topsfield of England. Several disputes had arisen relative to the boundary lines by which Topsfield was divided from Boxford, Wenham and Ipswich, with curious incidents growing out of those disputes. In one instance the boundary passed directly through a house whose owner refused to pay his rates in either Topsfield or Ipswich, but when dunned by either town, would claim that he belonged in the other; Topsfield finally got rid of him by a change of the line so that the house was all in Ipswich. Mr. Peabody alluded to the spirit of liberty which had always been cherished by the people of Topsfield, whether in the days of the revolution, "when all the fighting men of the place were off to Charlestown," during the war of 1812–15, or in the dark days of the recent conflict.

After further remarks by Messrs. PHILLIPS, TODD, HOLMES and others, the following resolution, offered by Mr. E. N. WALTON, was unanimously adopted:—

Resolved, That the thanks of the Essex Institute be tendered to Messrs. Richard Phillips, C. T. P. Floyd, Thomas W. Pierce, Capt. Morgan, Charles Herrick, B. P. Adams, Benj. Poole, C. J. Peabody and other citizens of Topsfield for kind attentions during this visit, and also to the proprietors of the Methodist Church for the use of the meeting house.

Adjourned to meet at the rooms to-morrow (Friday) at noon.

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ADJOURNED MEETING, FRIDAY, JUNE 19, 1874.

WAS held this day at noon.

J. A. Allen of Cambridge, and James Coolidge of Salem were elected resident members.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., AUGUST, 1874. No. 8.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JULY 6, 1874.

MEETING this evening at 8 o'clock. The PRESIDENT in the chair. Records read.

The committee appointed to consider the propriety of commemorating the centennial anniversary of the meeting of the Provincial Congress in Salem, Oct. 5, 1774, reported: —

That they deem it proper and advisable to notice the event by an historical address, to be delivered on that day before the society.

Voted, That ABNER C. GOODELL, Jr., Esq., be invited to prepare and deliver the address.

After a discussion on this subject participated in by Messrs. E. B. Willson, C. Cooke, F. W. Putnam, W. P. Upham and others, it was

Voted, That the President be requested to appoint a committee of arrangements on the celebration.

Philip G. Skinner was elected a member.

NOTES ON AN EXAMINATION OF FOUR SPECIES OF CHITONS, WITH REFERENCE TO POSTERIOR ORIFICES.

BY WILLIAM H. DALL.

1. *Stimpsoniella Emersonii* (two specimens).

The large and fine specimen from the Gulf of St. Lawrence presented a posterior and terminal anus of large size, but with the edges not elevated into a papilla. The head of an ordinary pin could be inserted into it without violence.

The orifices of the ovaries, bilaterally symmetrical, were situated just behind, and, as it were, under the shadow of, the last branchia on each side. There were two fenestræ on each side of the anterior, a little further towards the girdle, and a little larger than the posterior.

This species resembles in most particulars the *Symmetrogephyrus Pallasii* of Middendorf, and it would seem as if his ungainly subgeneric or generic name should be adopted. The hairs are precisely similar in both species, as are the branchiæ. The insertion plates also agree, according to Dr. Carpenter, who examined a series from a specimen obtained by me in the Aleutian Islands. The principal differences, beside the larger size of *Pallasii*, are as follows: In the latter the hairs are more closely set, the texture of the epidermis is thicker and harder, the points of the valves are more nearly covered, and the skin is smoothly rounded over the back, not showing anything of the form of the valves, as is the case in *Emersonii*. I think also the valves are smaller, in proportion to the size of the animal, in *Pallasii* than in *Emersonii*.

2. *Tonicella marmorea* Fabr.

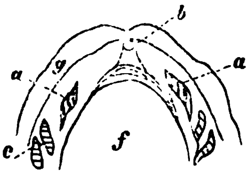
This species showed a clearly defined posterior and terminal vent. The fenestræ of the ovaries were symmetrical on each side, but the branchiæ pass behind them and conceal them. They are very small, and I could not detect more than one on each side, though fresh specimens, not hardened and contracted by alcohol, might show more.

3. *Trachydermon albus* Lin.

The same remarks apply to this species. The vent was terminal, and on a papilla.

4. *Trachydermon ruber* Lin. Three specimens examined.

These specimens were much hardened by alcohol. Removing the plates from above and then the inner lining membrane, beneath the large and well filled ovaries the intestinal canal is seen, terminating in the median line posteriorly. From the outside the anus was not perceptible in the smaller specimens. By carefully turning back the outer edge of the girdle in the largest specimen, after removing the posterior plates, but without touching the animal with the dissecting knife, the anus was perceptible, with a pellet of fæces impacted in the opening. It is exactly in the median line behind as in the annexed sketch, very small, and not on a papilla.* It is also a little higher up than in the other species. The "cancellated space" noticed by Mr. Emerton (as per notice in Ann. Mag. Nat. Hist., Mar., 1874) on each side behind the branchiæ is a fold or groove containing the ovarian fenestræ. There were in this specimen three fenestræ on each side, but according to Dr. Carpenter the number is variable, Prof. Verrill having counted from four to six in some specimens. These fenestræ in this species are more complicated than in most chitons which I have examined. I have never been able to satisfy myself that there is a true oviduct, and it may be that the ova are dehiscent in the perivisceral cavity and may be expelled through the fenestræ, as they are through the analogous "oviducts or segmental organs" of brachiopods.



a, *a*, fenestræ; *b*, anus; *c*, branchiæ; *f*, foot; *g*, girdle.

The fact that the ovarian openings are not simple apertures, was noticed by me in dissecting chitons in 1869, but I am not aware that attention had been previously called to this fact *in print*. Their position had been previously known, but it is not uniform in all chitons. In some the fenestræ are close to the anus and single on each side, and it has been stated that the ovary of one side is sometimes abortive. This last I have not yet observed in any species which I have dissected.

* * *

Field Meeting at West Newbury, Thursday, July 16, 1874.

The meeting this day was very pleasant, and in many of its features different from the usual routine adopted on similar occasions. The forenoon rambles were not extensive, and the excursion on the river proved an acceptable substitute.

The 8.13 morning train from Salem took a goodly number of excursionists to Newburyport, who there embarked on board the barge "Queen of the Merrimack," which was towed by the powerful steam tug "Mattie Sargent" up the river to West Newbury, the place of meeting. The freshet had made a strong current, and the wind was ahead, hence the passage was not rapid; this seeming disadvantage was rendered acceptable, however, by affording an opportunity to get better views of the picturesque scenery on either hand. The banks of the river and the surrounding hills and slopes are characterized by symmetry and beauty. The river is navigable as far as Haverhill, which is about eighteen miles from Newburyport; and very attractive scenery is between these points. The Eastern Railroad bridge; the Amesbury chain bridge; the fine residence of Mrs. Huse, built and improved at great cost by Rev. Mr. Fletcher, the lecturer and writer on Brazil; the castle-like mansion on the eastern bank owned by Henry W. Moulton; the village at Salisbury Point, famous for hats and dory boats; the laurel grounds, which have furnished so much annual enjoyment to people of a philanthropic and progressive turn; the village at South Amesbury, and the Rock's Bridge, connecting East Haverhill with West Newbury, were among the more prominent objects which engaged attention, and elicited numerous inquiries.

West Newbury, as seen from the river, presents the appearance of a clean and thrifty farming town. It contains some good farms, and has always furnished an intelligent representation in the Essex Agricultural Society. The shoe business is carried on to some extent in the town, but the principal manufacturing element is in comb making.

In literature this town has sent forth one shining light, second to few in this or any other country, Professor *Cornelius Conway Felton*,[*] who was so long an ornament to Harvard College. He was born in West Newbury, and the old house in which he first saw the light is yet in existence, on the left of the road to Newburyport, not, as "Appleton's Cyclopedia" erroneously says, "now Newbury." Old Newbury has honors enough of its own, without borrowing anything from neighboring towns. Prof. Felton achieved much in the department of Greek literature, and prepared both text books for preparatory schools and editions of classic Greek for colleges. Many of our readers owe much to him in the acquiring of a knowledge of the beautiful tongue of the Greeks. He was a man of wide literary culture, publishing a history of Greece; Poets and Poetry of Europe (with the aid of Prof. Longfellow); a translation of Prof. Guyot's work on Physical Geography, and an edition of the Birds of Aristophanes. He also wrote numerous articles for the "North American Review," and edited several articles for "Appleton's Cyclopedia." Indeed, the world owes something to this town for such a man.

In theology, Harvard College owes much to the Second Parish of West Newbury, who gave up their pastor from 1774 to 1792, Rev. David Tappan, D. D.,[†] to fill the chair of Divinity in that institution. Andover Theological Seminary also came to this Second Parish of West Newbury to find its first Professor of Theology, Rev. Leonard

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[*] Pres. Felton, son of Cornelius Conway and Anna (Morse) Felton, was born Nov. 6, 1807. He entered Harvard College in 1823, having studied at the Academy at Bradford, with Joshua Coffin, the historian of Old Newbury, and at the Academy in North Andover under Simeon Putnam. Graduated in 1827, was connected with the Livingston County High School, Geneseo, N. Y., two years, appointed tutor in Harvard in 1829: Professor of Greek in 1834 and President in 1860. He died Feb. 26, 1862.

[†] Prof. Tappan was son of Rev. Benjamin Tappan, of Manchester, gr. Harvard College 1771, ord. at West Newbury, April, 1774, and inaug. Hollis Professor of Divinity in Harvard, Dec. 26, 1792; d. at Cambridge, Aug 27, 1803, aged 51.

Woods, D. D.,* who was its pastor from 1798 to 1808. Whatever soundness in the faith that Seminary has preserved may be truthfully said to be largely due to the pioneer toil of Dr. Woods. He was also a layer of foundations in several of the great benevolent societies, organized in his day, having been a member of the Prudential Committee of the American Board for about twenty-five years. What this town has given to the world in the other departments of medicine, law and civil affairs, further research might be able to show something. Let it suffice to name Major Ben. Perley Poore, a journalist of some fame and the genial Washington correspondent of the "Boston Journal." During the intervals of leisure from his duties in Washington he resides on his farm in West Newbury, which is one of the most celebrated in the county.

The homestead comprises a collection of buildings arranged in a somewhat crescent form, with the ends flanked with stone circular buildings, one of which contains a portion of his unique and valuable library, the other devoted to the culinary department of the establishment; in the centre a rustic porch, surmounted by a noble pair of antlers and gracefully covered by creeping vines—the whole presenting a very pleasing and unique appearance. The large hall bespeaks the character of the establishment, being ornamented with paintings and curious old armor. There are also a series of rooms furnished in the revolutionary period; one a parlor, with its buffet filled with curious old crockery, the ancient chairs, tables, fireplace, etc. Another, the old kitchen, with the large fireplace, pot hooks and trammels, andirons and spit, pots, tinder box, etc., a variety of chairs; the dressers with the pewter plates, mugs, etc.; the chamber with the bedstead, and its linen actually woven in the house, the chest of drawers filled with the clothing of the olden times, the cocked hat, breeches, waistcoat, brocade dresses, etc. Other rooms contain a large quantity of ancient implements, as spinning wheels, loom, flax breaker and comb, etc.; a plough of the last century, and other tools, not only those used on the farm but by the mechanics of that period; an old printing press with the stands, cases and types used by a brother of Dr. Franklin. In fact, the result only of a rapid glance at the collection of antique and historical materials in this old museum could not be enumerated short of a large volume.

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* Leonard Woods, son of Samuel and Abigail Woods, of Princeton, Mass., b. 19th June, 1774, gr. Harvard College, 1796, ord. at West Newbury, Nov. 1798, Professor of Theology in the Theological Seminary at Andover, 1808-1846; d. at Andover, Aug. 24, 1854.

There is also a very large collection of autographs, engravings, specimens of newspapers and newspaper clippings and other historical materials gathered here in rich profusion.

The garden contains many fine flowers, and there are also groves of oaks, pines and other forest trees planted years since by the present proprietor; from the hill an extensive view is obtained for miles in every direction; the Isles of Shoals and towns of the Merrimac Valley and others far and near.

At the landing we found Mr. Hayden Brown, one of the leading citizens, ready to give us a cordial welcome and escort us to the Second Congregational Church, which had been tendered for the use of the Institute for the day.

This church was gathered by Rev. John Tufts, of Newbury, and organized Sept. 1, 1731, under the name of the Fourth Church in Newbury. Under date of Feb. 12, 1821, it assumed the name of the West Church, of

West Newbury, and soon after the Second Church in West Newbury, the last being its present corporate name.

It has therefore existed one hundred and forty-three years, and has had nine pastors, of whom all save one were ordained here, beginning their ministry with this church. The following have been the pastors: 1, William Johnson, ord. Sept. 15, 1731, died Feb. 22, 1772; 2. David Tappan, ord. Apr. 18, 1774, dis. Sept. 6, 1792; 3. Leonard Woods, ord. Dec. 1798, dis. Sept. 28, 1808; 4. John Kirby, ord. June 12, 1816, drowned Dec. 5, 1818; 5. Elijah Demond, ord. Mar. 7, 1821, dis. Sept. 3, 1826; 6. Paul Couch, ord. Mar. 27, 1827; 7. J. Q. A. Edgell, ord. Sept. 17, 1832, dis. Oct. 27, 1853; 8. Davis Foster, ord. Nov. 4, 1855, dis. Sept. 24, 1867; 9. Seneca M. Keeler, installed June 13, 1872.

The first meeting house was erected on Silloway Hill, and the first meeting of the parish was held June 5, 1731. The second house was built in what was then known as Woodman's Lane, in 1815, and was dedicated Jan. 5, 1816. The third house (the one in which the church now worships) was removed to its present site, remodelled and enlarged into its present form in 1856 and 1857; corner stone laid Sept. 24, 1856, dedicated March 12, 1857.

The sun was pouring down its hottest rays as we walked up the hill from the shore to the church, and we felt the heat in striking contrast to the refreshing breeze on the river. At the northwest the black storm clouds were rising rapidly, the lightnings were flashing with scarce an interval, and the thunders were incessantly reverberating among the lofty hills and valleys. Soon the rain poured down in torrents for a short time, the party having in the meantime obtained shelter in the vestry of the church.

Rev. Seneca M. Keeler, the present pastor of the church, was present with several others who were active in rendering all possible attention to the visitors, and the refreshments brought by the party were augmented by a bountiful supply of tea, coffee and ice water. The collation was served in the commodious vestry, and at its close the rain had ceased. The air was greatly relieved of its oppressiveness and the weather was delightful.

The rain prevented any extensive rambles, and the only excursion upon land at West Newbury was between the landing and the church, and a short visit to the extensive comb manufactory of Messrs. S. C. Noyes & Co., but a few rods from the church. While the combs from this establishment are known almost everywhere in the country, there were many of the visitors who had never before seen the manufacture, and their ideas of the process required to transform a cow's horn into the beautiful and useful utensil so necessary to the comfort and happiness of every civilized being, were about as crude as some of the burlesques on agriculture would suggest about farming. Thousands of finished combs are produced weekly at these works, but it is a long time before the material gets through the various stages of preparation, which were explained by those in attendance.

At the hour for the afternoon session the company reassembled in the church. The President, HENRY WHEATLAND, occupied the chair. The records of the last meeting were read by the secretary.

The SECRETARY announced the following correspondence:—

From J. A. Allen, Cambridge, June 21; E. P. Boon, New York, June 16, 26, July 13; J. W. Brown, West Newbury, July 11; P. Carpenter, Montreal, June 6; James Coolidge, July 2; W. C. Folger, Boston, June 29; Edward Herrick, Athens, Penn., June 25, 29; G. B. Loring, July 2; Thomas Morong, Ipswich, July 9; Alfred

Osgood, Newburyport, June 19, July 3, 11, 15; George H. Peirson, June 26; Charles C. Perkins, Newport, R. I., July 10; Charles B. Rice, Danvers Centre, June 18; Jacob H. Studer, Columbus, Ohio, June 15; Grosvenor Library, Buffalo, N. Y., July 14; Buffalo Historical Society, June 16; Liverpool Literary and Philosophical Society, June 18; Corporation of Yale College, New Haven, July 13; New Jersey Historical Society, June 20, 26; Virginia State Library, Richmond, June 25.

The Librarian reported the following additions:—

By Donation.

Allen, J. A., Boston. Miscellaneous pamphlets, 4.

American Swedenborg Printing and Publishing Society. Arcana Celestia. 10 vols. 8vo. Heaven and Hell. 1 vol. 8vo. Four Leading Doctrines. 1 vol. 8vo. True Christian Religion. 1 vol. 8vo. Divine Love and Wisdom. 1 vol. 8vo. Apocalypse Revealed. 2 vols. 8vo. Conjugal Love. 1 vol. 8vo. Divine Providence. 1 vol. 8vo. Miscellaneous Theological Works. 1 vol. 8vo.

Brown, Henry A. Proceedings of the National Board of Trade. 5 vols. 8vo. 1868-1873.

Cabot, J. S. The Horticulturist, 1846-1866. 20 vols. 8vo. Gardener's Monthly, 1826-1843. 19 vols. 8vo. Pomological Magazine, 1828, '29, '30. 3 vols. 8vo. Florist's Guide, 1827-32. Journal D' Horticulture Pratique, 1857, '58, '59. 3 vols. 8vo. Annales De Pomologie. 8 vols. 4to. Album De Pomologie, 1850. 2 vols. 4to. Gardener's Monthly, 22 numbers. Magazine of Horticulture, 39 numbers. Tilton's Journal of Horticulture, 22 numbers. The Horticulturist, 103 numbers.

Conant, W. P., St. Louis, Mo. Reports of the St. Louis Public Schools for 1860-61-62, 1863-4, 1864-5, 1865-6, 1866-7, 1867-8, 1872-3. 7 vols. 8vo. Catalogue of the University of St. Louis, 1872-73. 8vo pamph. Catalogue of the Washington University, 1872-3. 8vo. pamph.

Dorr, Eben P. Sketch of the First Monitor, and its Inventor. 8vo pamph. 1874.

Folger, W. C., of Hingham, Mass. Miscellaneous Town Reports, 7.

Green, S. A., Boston. Miscellaneous pamphlets, 7.

Griffin, L. F., Andover. Catalogue of Phillips Academy, Andover, 1873-4.

Kimball, James. Boston Weekly Magazine, 1804-5. 1 vol. 4to. Proceedings of the Supreme Council for the Northern Masonic Jurisdiction, 11 numbers.

Lee, Harriet P. Documents relating to the Sanitary Commission, 112. Dwight's Journal of Music, 45 numbers. The Saturday Review, 15 numbers. The Spectator, 13 numbers.

Loring, Geo. B. Report on the Statistics of Labor in Mass. 1874. 1 vol. 8vo.

Massachusetts Medical Society. Medical Communications of the. Vol. vii, pt. viii. 1874.

Morse, E. S. Portland and East Portland Directory for 1873. 1 vol. 8vo. Nevada Directory for 1868-9. 1 vol. 8vo. San Jose Directory for 1870. 1 vol. 8vo. Portland Directory, 1873. 1 vol. 8vo. Sacramento Directory, 1870. 1 vol. 8vo. Salt Lake City Directory, 1869. 1 vol. 8vo. Oakland and Brooklyn Directory. 1873. 1 vol. 8vo.

Osgood, Chas. S. Public Documents of Mass., 1871. 1 vol. 8vo. Acts and Resolves of Mass., 1871, 1872. 2 vols. 8vo. Registration Reports, 1865, 1868, 1869, 1870, 1871, 1872. 6 vols. 8vo. Reports of the State Board of Charities, 1869-70, 1870-71, 1872-73. 3 vols. 8vo. Mass. Life Insurance Reports, 1871, 1872, 1873. 3 vols. 8vo. Fire and Marine Insurance Reports, 1869, 1872, 1873, 1874. 4 vols. 8vo. Railroad Commissioners Reports, 1872-73. 2 vols. 8vo. Railroad Returns, 1866, 1868, 1869.

3 vols. 8vo. Journal of the Mass. House of Representatives, 1872, 1873, 1874. 3 vols. 8vo. Journal of the Mass. Senate, 1872, 1873, 1874. 3 vols. 8vo. Report on the Board of Education, 1869, 1872–73. 2 vols. 8vo. Manual for the General Court of Mass., 1865, 1868, 1869, 1870, 1872, 1873, 1874. 7 vols. 12mo. Miscellaneous pamphlets, 94.

U. S. Patent Office. Official Gazette, June 2, 9, 16, 23. 1874.

By Exchange.

Archiv für Anthropologie. Band vi, Heft iv, 1874.

Buffalo Society of Natural Sciences. Bulletin of. Vol. ii, No. 1, 1874.

Crosse et Fischer. Journal de Conchyliologie, Tome xiv. 3e Série. No. i, ii, 1874.

Geological Survey of Canada. Report on the Fossil Plants of Canada, by J. W. Dawson, LL. D., F. R. S., F. G. S. Montreal, 1873.

Gesellschaft Naturforschender Freunde in Berlin. Sitzungs-berichte, jahrg, 1873. 1 vol. 8vo.

Institut Historique in Paris. L' Investigateur, 40s Année. No. ii. Feb., Mar. 1874.

K. K. Zoologisch botanische Gesellschaft in Wien. Verhandlungen, Band, xxiii. jahrg. 1873. 1 vol. 8vo.

Konigliche Gesellschaft in Regensburg. Flora, 1873. 1 vol. 8vo.

Naturforschenden Gesellschaft in Danzig. Shriften, Band iii, Heft ii, 1873.

Naturforschenden Gesellschaft in Zurich. Vierteljahrsschrift, jahrg, xvii, 1872.

Naturhistorischer Vereins in Augsburg. Bericht, 1873. 1 vol. 8vo.

Naturwissenschaftliche Gesellschaft "Isis" in Dresden. Sitzungsberichte, jahrg, 1872. Oct., Nov., Dec. Jahrg. 1873. Jan.-Dec. Dresden. 1873–4.

Naturwissenschaftlichen Vereine zu Bremen. Abhandlungen, Band iii, iv (Schluss). Heft. Band iv, Heft i. 1873–4. Beilage, No. iii, zu den Abhandlungen des. 4to pamph.

Peabody Institute of Baltimore. Seventh Annual Report of the Provost to the Trustees of. June 4, 1874.

Phila. Academy of Natural Sciences. Proceedings of. Part I. Jan., Feb. Mch., 1874.

Physikalisch-medicinische Gesellschaft in Würzburg. Verhandlungen, vi Band iii and iv (Schluss) Heft.

Royal Asiatic Society. Journal of the North China Branch of the. New Series, No. viii, 1874.

Royal Society of London. Proceedings of the. Vol. xxi, Nos. 146, 147. Vol. xxii, Nos. 148, 149, 150.

Royal Society of Tasmania. Monthly Notices of Papers and Proceedings of the. for 1872.

Société d' Acclimatation in Paris. Bulletin Mensuel De La. 3me Série, Tome i, No. 2, 1874.

Société d' Anthropologie de Paris. Bulletins de La. Tome viii, 11e Série, Mai, Juillet, 1873.

Société Vaudoise des Sciences Naturelles in Lausanne. Bulletin. 2e Série. Vol. xii, No. 71. Feb., 1874.

Verein der Freunde der Naturgeschichte in Meklenburg. Archiv, 27 Jahrg. 1873. 1 vol. 8vo. Neubrandenburg, 1873.

Vereins für Erdkunde in Darmstadt. Notizblatt, iii Folge, xii Heft, Nos. 133–144.

Vereines zur Beförderung des Gartenbanes in Berlin. Monatsschrift des, 16 Jahrg. Jan.–Dec. 1873.

Yale College. Catalogue of, 1874. 8vo pamph. Obituary Record of the Graduates of, 1874. Yale College in 1874.

Zeitschrift für die gesammten Naturwissenschaften in Berlin. Band vii, viii, 1873. 2 vols. 8vo.

Zoologische Gesellschaft in Frankfurt, a-M. Zoologische Garten, Jahrg. xiv. No. 7–12. Juli–Dec., 1873.

Publishers. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem City Post. Salem Observer. Silliman's Journal.

The President made a few remarks, in which he mentioned that this was the first meeting of the Institute at West Newbury, and that now every municipality in Essex County had been visited except Lawrence, and in accordance with the custom observed at the meetings at new places, he gave a brief statement of the history and objects of the society. Some of the facts stated are as follows:—As early as 1832–3, several young men discussed the propriety of organizing a society to promote the study of natural history. In the December following such an organization was partially effected, and at Topsfield, in April, 1834, it was perfected. The Natural History Society and the Essex Historical Society were united in 1848, and incorporated under the name of Essex Institute, and the sphere of its labors has from time to time been enlarged, until now it embraces history, natural history, horticulture, and the fine arts. The first field meeting of the society was held in 1849. At that time only a few persons attended, and the meetings were held in the farm houses or other convenient places, but they did not assume the present character until the summer of 1856. Since then meetings have been held in thirty-two towns or cities in Essex County, and four beyond the limits, and in fifty-eight different parishes or districts, from one to five in the same townships.

Mr. **George D. Phippen**, of Salem, gave an interesting discourse on the few plants that had been gathered, and also on the familiar plants of the field and the garden, particularly on that unwelcome class known as weeds. For convenience he divided them into three classes, wild, cultivated, and intrusive. Among the many referred to he spoke of "woodwax," the seed of which was first sent to this country in 1629, to Gov. Endicott, and it was described as eminently useful for coloring purposes. The "white weed," with its traditional fame, is a common plant with our early history. "Chickweed" is referred to by the earliest botanists as suitable food for birds, has been long known, and is wonderfully diffused throughout the globe. The "nettle plant," from which good linen can be made, was first introduced into England by the Romans, and it is said, with more humor than truth, was used for the purpose of thrashing each other to keep themselves warm in cold weather, to which they were unused. Purslain, charlock, ambrosia and others were referred to. He also spoke of milkweed, the fibre of which has been used for textiles; and of the raising of hybrids and the success that has attended the efforts in this direction in the great variety of beautiful flowers and fine fruits, the result largely of human agency, ensuring hopes of never ending novelty and satisfaction.

Mr. **John Robinson** praised the arrangement of ferns which were placed in front of the pulpit, and spoke of the kindness of the people in furnishing them.

Prof. **D. B. Hagar**, of the State Normal School in Salem, spoke of the pleasure which he experienced when he saw men who, like a previous speaker, had some intellectual pursuit in addition to his ordinary business life.

The work of the Essex Institute in the way of cultivating a taste for scientific pursuits, is an excellent one; and one of the best things we can do for young people is to encourage them to select some one branch of science and make it their study in their leisure time. Such pursuits are especially valuable in lifting men above the low life which regards dollars and cents as the chief object to strive for.

Mr. ABNER G. PHIPPS, agent of the State Board of Education, whose present visit to the town was the first since he had taught school there, before he entered College, spoke in support of the sentiments uttered by the previous speaker.

Dr. JEREMIAH SPOFFORD referred to the medicinal qualities of the milkweed spoken of by Mr. Phippen, and also to a theory entertained by him in regard to the ancient course of the river in the vicinity of Newbury, which he thought must have been some distance south of the present stream, and fifteen or twenty feet higher.

Mr. HAYDEN BROWN, of West Newbury, talked of the various matters relating to the history of the town, and the work of the Institute. He spoke of the people of the town as an honest, hard-working class, without a beer-saloon, a bowling alley, or a place where rowdies can congregate.

Hon. STEPHEN M. ALLEN, of Boston, made some interesting statements relating to the construction of dams and reservoirs.

Rev. W. H. H. **Marsh**, of Salem, in response to a call from the chair, said he regretted he had not the opportunity of attending more frequently the meetings of the Institute, the several objects of which are of such great practical importance. The age is marked by scientific investigation, and as science has so vastly enlarged her domain, and has thus disclosed the interdependence of the several branches of scientific investigation, the successful prosecution of any single department of science requires a knowledge of several of the others. The true scientific spirit aims at the largest comprehension possible of facts, and receives hypotheses with caution, if not with distrust. For this reason the correct interpretation of nature and the true interpretation of revelation at those points where it touches science, will certainly harmonize. Science interrogates nature and nature reveals God, and so scientific study should be promotive of virtue, morality, high-toned character, reverence and faith.

On motion of Mr. N. A. **Horton**

Voted That the sincere thanks of the Institute are due to the proprietors of the Second Church in West Newbury for the use of their building to hold this meeting; also to Mr. Hayden Brown, Mr. Gilman W. Brown, Rev. S. M. Keeler, and other citizens of West Newbury, for courtesies extended during this pleasant excursion.

An adjournment was had at about four o'clock, and it became necessary for the company soon to take their departure on the homeward trip.

The people of West Newbury had given the visitors a very favorable impression of the town and its inhabitants, and it is hoped the acquaintances formed under such pleasant auspices will be long continued.

Personally we desire to express our grateful appreciation of attentions from Rev. Mr. Keeler, a gentleman of high attainments and culture; Mr. Hayden Brown, of the firm of S. C. Noyes & Co., and his son, Mr. Gilman W. Brown, to whom we were indebted for valuable information in collecting material for this sketch. The elder Mr. Brown seems to be ready to every good word and work tending to benefit the community in which he resides. He has furnished a fine room for the Library Association, just organized on a plan of individual membership under a law of the State for such purposes, and we hope at our next visit to find its shelves groaning with their weight of wisdom. The nucleus is already inaugurated, and it will not be allowed to remain undeveloped.

The passage down the river was quite rapid, as wind and tide were now in our favor. Vocal music did its part in aiding the general enjoyment, and it was with a feeling of regret that we parted company with the Merrimac and its beautiful "Queen." The 6.23 train soon transported us to the good old City of Peace, after a day of rare pleasure and much profit.

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REGULAR MEETING, MONDAY, AUGUST 3, 1874.

MEETING this evening at 8 o'clock. The PRESIDENT in the chair.

Richard Harrington, of Salem, and Gilman W. Brown, of West Newbury, were elected resident members.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 6. Salem, Mass., September, 1874. No. 9.

One Dollar a Year in Advance. 10 Cents a Single Copy.

Field Meeting at Rockport, Thursday, August 6, 1874.

The fourth field meeting the present season was held this day. The weather was very propitious for an excursion, the temperature cool and refreshing. The party, numbering about two hundred and fifty, was made up of delegations from Lynn, Salem, Beverly, Manchester and other towns in Essex County, a large proportion being, however, from Salem. The railroad ride was pleasant, affording a passing view of interesting sections of Beverly, Manchester and Gloucester, with occasional glimpses of the ocean and of some of the beautiful sea-side villas that have within the past few years been erected on this shore. The striking characteristics of the scenery on entering the precincts of Cape Ann are the many bowlders to be seen upon the hills on every side.

On arrival at the place of destination a committee of the Rockport Agricultural Association met the party and proceeded to the Town Hall, which was the rendezvous for the day, and where a cordial reception was extended.

Then the party separated into groups, each wending their way to visit the various objects of interest, as inclination dictated.

Some went to Pigeon Cove, which always offers many attractions; some visited the quarries, where the process of getting out huge blocks of beautiful granite was watched with interest; and some took general rambles along the shore and noticed the artificial harbors constructed by the erection of solid granite breakwaters built at great cost; some went to Long Beach, which is in view of Thatcher's Island, where, Aug. 19, 1635, twenty-one persons were cast away and only Mr. Thatcher and his wife were saved; while others visited the extensive and fine cabinets of Dr. Barden and Mr. Knowlton, which contain many choice mineralogical and geological specimens. Bears' Skin Neck and the delightful woods claimed a fair share of attention. There are a number of fine residences in the town proper and at the Cove. Among those that attracted notice was that of John D. Sanborn, Esq., which is most pleasantly situated and commands a charming view.

At 2.30 P. M., after all had lunched in the dining room at the hall, or in little knots on the rocks or in the woods, the company gathered in the large audience room, where the afternoon session was held. The meeting was called to order by the President, HENRY WHEATLAND.

In the absence of the Secretary, Mr. N. A. HORTON was requested to act. Records of preceding meeting read.

The SECRETARY announced the following correspondence: —

From M. M. Carpenter, Montreal, Canada, Aug. 3; I. W. Fielder, Everett, July 16; F. E. Hotchkiss, New Haven, Conn., July 27; F. I. Ilsley, Newark, N. J., July 18; S. M. Keeler, West Newbury, July 17; W. J. Knowlton, Boston, July 25; T. Morong, Ipswich, July 18; Stuart Rogers, Providence, R. I., July 18; George Russell, Boston, July 29; K. T. Woods, Aug. 4; Iowa State Historical Society, July 15; Leeds Philosophical and Literary Society, July 25; New York State Library, Aug. 1.

The LIBRARIAN announced the following additions:—

By Donation.

BROOKS, HENRY M. Reed's Apology. 1 vol. 12mo. Essex County Directory, 1869-70. 1 vol. 8vo. Conversations on Infant Baptism. 1 vol. 16mo.

BUTLER, B. F., of U. S. Cong. Speech in U. S. H. R., June 19, 1874.

CORNELL UNIVERSITY. Bulletin of. Vol. i, Nos. 1, 2, 1874.

HOTCHKISS, F. E., of New Haven, Conn. New Haven Directories for 1870, 1871, 1872, 1873. 4 vols. 8vo. Miscellaneous pamphlets, 16.

ILSLEY, F. I., of Newark, New Jersey. Newark City and Business Directory, 1873-74. 1 vol. 8vo. Miscellaneous almanacs, 54.

KIMBALL, JAMES. Freemason's Monthly Magazine for 1873.

KINGSLEY, Mrs. ——. Federal Republican and Commercial Gazette for 1873. 1 vol. folio.

LORING, GEO. B. Agriculture of Mass., 2d Series, 1873–74. 1 vol. 8vo. Thirty-fifth Registration Report, 1872–73. 1 vol. 8vo. Report of the Insurance Commissioner of Mass., 1874. 1 vol. 8vo. Miscellaneous pamphlets, 17.

MAINE BOARD OF AGRICULTURE. Report of the Secretary of the, for 1873-74. 1 vol. 8vo.

MASON, ALBERT, New York, N. Y. History of Burmah, by Rev. F. Mason. 1 vol. 8vo. 1860. The Story of a Working Man's Life, by F. Mason. 1 vol. 8vo. 1870.

MERRITT, L. F. The Shanghai Budget, Mch. 26, Apr. 2, 9, 18, 25, May 2, 9, 16, 23, 30, June 6, 13, 1874. Essex County Mercury, May 27, June 17, 24, July 1, 15, 23, 1874.

OFFICE OF THE CHIEF OF ENGINEERS. Report of a Reconnaissance in the Ute Country made in 1873, by Lieut. E. H. Buffner. 8vo pamph. Washington, 1874.

PERKINS, ALBERT C., of Exeter, N. H. Catalogues of Phillips Exeter Academy, 1783–1869, 1873–4.

QUINT, A. H., of New Bedford, Mass. Minutes of the Seventy-Second Annual Meeting, Lynn, June 16–18, 1874, with the Reports and Statistics. Boston, 1874.

SWALLOW, GEO. C. Report of the Curators of the University of the State of Missouri, Catalogue, etc., for the year ending June 24, 1874.

U. S. PATENT OFFICE. Official Gazette, July 14, 1874.

WORCESTER LYCEUM AND NATURAL HISTORY ASSOCIATION. Officers of the, for 1874–5. Worcester, 1874.

YOUNG MEN'S CHRISTIAN ASSOCIATION OF WORCESTER. Report for 1874.

By Exchange.

BERWICKSHIRE NATURALIST CLUB, Alnwick. Proceedings. Vol. vii, No. 1, 1873.

BOSTON PUBLIC LIBRARY. Bulletin of. July, 1874.

BOTANISK TIDSSKRIFT IN KJOBENHAVN. Tidsskrift. Vol. ii, pts. 2, 3. Journal De Botanique, 1872–3. 2 pamphlets, 8vo. 1874.

IMPÉRIALE ACADÉMIE DES SCIENCES DE ST. PETERSBOURG. Mémoires, Tome xix, Nos. viii, ix. x, 1873. Tome xx, Nos. i, ii, iii, iv, v, 1873. Tome xxi, Nos. i, ii, iii, iv, v, 1873. 13 pamphlets, 4to. Bulletin, Tome xviii, Nos. iii, iv, v, 1873. Tome xix, Nos. i, ii, iii, 1873–4. 6 pamphlets, 4to.

IOWA STATE HISTORICAL SOCIETY. The Annals of Iowa. April, 1874.

KONGELIGE DANSKE VIDENSKABERNES SELSKABS IN KJOBENHAVN. Oversigt, 1873. No. ii.

MANCHESTER SCIENTIFIC STUDENTS' ASSOCIATION. Annual Report for 1873.

NATURAL HISTORY SOCIETY OF MONTREAL. Canadian Naturalist and Quarterly Journal of Science. Vol. vii. No. 5. 1874.

NEW JERSEY HISTORICAL SOCIETY. Proceedings. Vol. iii, 2d Series, No. 4, 1874.

New York Genealogical and Biographical Society. Record of, Vol. v, No. 3. July, 1874.

Publishers. American Journal of Science and Arts. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem City Post. Salem Observer.

The President, in introducing the exercises, took occasion to refer to the memory of the late Rev. Stillman Barden,* who, on previous visits to Rockport had been unremitting in his attentions. Mr. Barden had been the minister of the Universalist Society of this place for several years, and during his residence here had, by his indefatigable labors, contributed largely to our knowledge of the mineralogical treasures found occasionally during the excavations in the extensive quarries.

Mr. Alfred Osgood, of Newburyport, read the following notes concerning the

"LEAD MINE" AT ROCKY HILL, WEST NEWBURY.

In the early part of last year a farmer of Newbury, at or near a place called "Rocky Hill," discovered a piece of lead ore on the surface of the earth, and, incited by records or traditions of former discoveries of the metal in the same region, he purchased the lot of land, containing twelve acres, and commenced digging, finding pieces of the size of one pound and upwards to some of two or three hundred pounds in weight, distributed among the drift, which in this region consists largely of angular fragments not much worn, and a loamy soil. The amount of ore realized up to date being about three tons. The dimensions of his pit are thirty feet by five and six feet in depth; the deposit of ore, however, was not more than twelve feet in length and lying on the northwest side of a bowlder, containing small veins of lead, antimony, and sulphuret of iron. (The ledges in that region are what Professor Hyatt calls Diorites.)

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* For a biographical and obituary sketch of Rev. Mr. Barden, by Rev. Mrs. P. A. Hanaford, see Historical Collections of Essex Institute, Vol. vii, page 213.

Other prospective diggings disclosed only bowlders much worn and rounded by glacial action, and of the same character as the large one.

All of the pieces of lead ore were much worn, and the iron in contact decomposed.

Mr. F. W. PUTNAM made some further observations, not only on this mine, but in explanation of the process by which the bowlders seen standing alone on the high hills are brought hither on the ancient icefields from the North.

He also gave a very interesting account of

THE ANDERSON SCHOOL OF NATURAL HISTORY ON

Penikese Island, where he, with others, had spent several weeks past as an instructor. This island, situated some twelve miles south from New Bedford, one mile in length by a half a mile in width, was donated by Mr. Anderson, of New York, a year or two since, to Prof. Agassiz, as a location for a scientific school during the summer months.

Mr. Anderson also gave the sum of fifty thousand dollars to be expended for the necessary buildings, etc. The school was in operation for the first time last season, under the direct superintendence of Prof. Agassiz, who gave to it his accustomed zeal and vigor to establish it upon a firm and enduring basis. Mr. Alexander Agassiz, son of the late Prof. Agassiz, is the present director, and the pupils, who come from all parts of the country, are composed of Normal teachers and professors, principally from the western colleges. There are over fifty pupils and from ten to twelve instructors, each instructor having charge of a special department. He described the several buildings and the method of instruction pursued. Text books are abolished and the studies are directly from the specimens by dissection and from life. A tug boat visits the island from New Bedford three times a week. The expenses of the students are about eight dollars per week. He anticipated the best results from this school in the dissemination of scientific knowledge, and certainly hardly greater facilities could be offered.

Hon. A. W. Dodge followed Mr. Putnam and quoted Agassiz to the effect that a great error in our mode of teaching is that we rely too much upon text books; yet he thought there was danger that those who made a specialty of certain studies would attach too much value to their particular study in comparison with others. He then made some very important remarks upon horticultural pursuits, and described the process of growth by which certain common fruits are developed.

Prof. Albert H. Tuttle, of the Ohio Agricultural and Mechanical College, Columbus, who has been visiting in Salem for some weeks for the purpose of dredging on the coast and collecting the marine fauna and flora, among other remarks spoke of the great variety of marine plants and animals found along the coast, and the opportunities thus afforded to students in zoology and botany for investigation and research.

Rev. A. B. Hervey, formerly of Peabody, now of Troy, N. Y., who is spending his summer vacation near the Clifton House, in Marblehead, gave a description of some of the curiosities seen during his trip to the shore, with a humorous narrative of his conveyance thither.

Mr. F. W. **Putnam** then described certain specimens which were placed upon the table, consisting of the egg case of a species of Buccinum; a stone bored by a Pholas; a sponge found on the shore; and a mass of clay in the form of a tube, which was probably the case of a large marine worm.

Hon. **James Kimball** read the following communication from Mr. J. B. Wardwell, of Methuen, Mass., giving

A DESCRIPTION OF AN INDIAN RELIC

Recently found on the farm of Mr. Wm. Hutchins, in Methuen, and near the New Hampshire line. A rock of gray, compact sandstone, with a broad, flat surface, and estimated to weigh nearly half a ton, was dug up in rising ground bordering meadow land, where, no doubt, once existed a small pond. Mr. Hutchins was digging large stones from this pasture for building purposes, which led to its discovery. The rock was bottom up, and so bedded that but a small portion of it was visible above ground, and this part was covered with a close, filmy, gray moss. It was hauled to the road (an eighth of a mile) where it was to be used in a cellar wall, and on removal of the dirt from the flat side, about three-fifths of a circle was discovered. To the eye this appears to be a perfect circle. It measures twenty inches in diameter, and from a half inch to three-quarters of an inch in depth. It was accomplished by drilling holes as near together as possible, and then removing the intervening portions. The instrument, or drill, appears to have been between a quarter and three-eighths of an inch in diameter, and the markings number one hundred and twenty, and are suggestive of the use of the *bow*, as a means of moving the drill. These markings bear the impress of great age.

The missing part of the relic will be sought after, from time to time, though I think with but little prospect of success, as the fracture has also the appearance of age, and the fragment may have been destroyed or carted off years ago. A small portion of the surface within the circle and near the line of fracture has been removed, and suggests the idea of its having been broken and abandoned, when it had reached its present stage of completion. The relic is now in my possession, and I regret to add, that in splitting it off from the main body, it was broken into several pieces, although fourteen holes were drilled for its accomplishment. The fragments are now joined, and the whole embedded in plaster.

A reasonable conclusion is, that it was intended for a large mortar, but ruined in the process. It is particularly interesting as a relic, on account of showing plainly the method adopted in hollowing out these vessels, as also, its remarkable size and correctness of outline. The surface in which this circle is wrought was originally coated with a silicious film, a large portion of which still remains.

Moulds will immediately be prepared, for furnishing casts of this relic at reasonable prices.

Mr. **Putnam** remarked on the importance of this relic as showing how the large stone vessels, or "mortars," as they are generally called, were made.

Mr. **Caleb Cooke** announced the donation of several interesting historical relics to the cabinets, including a pair of antique andirons and a chafing dish from Mr. William Russell, of Salem.

Mr. Cooke also mentioned that Mr. Charles H. Foster, of Salem, during his recent visit to Australia, had, with much care and attention, made a very valuable collection of the animals illustrative of the peculiar fauna of that country, comprising the skins of twenty mammals and one hundred and twenty-one birds, besides several reptiles, fishes, etc. These he has kindly presented to the Institute, and they have been accordingly deposited in the museum.

A vote of thanks to Mr. Foster for this very acceptable addition to the museum, and for the interest he has thus expressed in the promotion of the objects of the Institute; also to the other friends whose liberal contributions have been announced at this meeting, was unanimously adopted.

On motion of Mr. Kimball it was

Voted, That the thanks of the Institute are due to the Selectmen of Rockport for the use of the town hall to hold this meeting; and to the members of the Rockport Agricultural Association for courtesies extended to the members and their friends during this pleasant visit to Rockport.

Adjourned.

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REGULAR MEETING, MONDAY, AUGUST 17, 1874.

MEETING this evening at 8 o'clock. Vice President A. C. GOODELL in the chair.

Mrs. E. S. Metcalf, Charles T. Jenkins, Frederick Porter and George G. Putnam, all of Salem, were duly elected resident members.

Mr. C. H. HIGBEE presented specimens of the *Anthrenus varius*, and made some interesting remarks upon the history and habits of this insect, so injurious to woollen fabrics.

The chair presented to the Institute an old cartridge box, the gift of Hon. William Fabens, of Marblehead. This old box, with its belt and covers, was found in the walls of an ancient farmhouse, recently taken down, upon the Neck, in Marblehead. As it bore the monogram of George the Second it may have been secreted previous to 1760 by some deserter from one of the many ships of war that sailed to our shores before the revolution. Remarks suggested by this subject were made by Messrs. W. P. Upham, Henry Hale, and others.

Adjourned.

* * *

REGULAR MEETING, MONDAY, SEPTEMBER 7, 1874.

MEETING this evening at 8 o'clock. The PRESIDENT in the chair. Records of last meeting read.

The SECRETARY announced the following correspondence:—

From M. Anagnos, Boston, Aug. 27, Sept. 7; Gilman W. Brown, West Newbury, Aug. 12; C. C. Carpenter, Andover, Sept. 8; John D. Champlin, Jr., New York, Aug. 27; Joseph Cummings, Middletown, Conn., Sept. 14; Samuel Hart, Hartford, Conn., Aug. 17; A. Lackey, Haverhill, Aug. 31; R. Ridgway, Washington, D. C., Aug. 12; W. Hudson Stephens, Denver, Col., Aug. 27; Charles A. Walker, Boston, Aug. 25; Yale College, Aug. 24.

The LIBRARIAN reported the following additions:—

By Donation.

BRIGGS, DANIEL B., of Lansing, Mich. Report of the Superintendent of Public Instruction of the State of Michigan, 1873. 1 vol. 8vo.

BUREAU OF EDUCATION, WASHINGTON, D. C. Circulars of Information of the. No. I, 1874.

Butler, B. F., M. C. Memorial Addresses on Charles Sumner, Apr. 27, 1874. 1 vol. 8vo. U. S. Coast Survey for 1870. 1 vol. 4to. Report of Explorations and Surveys for a Ship-Canal, Isthmus of Darien. 1 vol. 4to.

Cabot, J. S. The Life of John Phillips. 1 vol. 12mo. Tariff of Duties, by P. P. Degrand. 1 vol. 12mo. Grammar of the Greek Language. 1 vol. 12mo. Adam's Latin and English Grammar. 1 vol. 12mo. Poetical works of Lord Byron. 1 vol. 12mo. Patriotic Addresses. 1 vol. 12mo. Butler's Analogy. 1 vol. 12mo. Watt's Logic. 1 vol. 12mo. Anecdotes. 1 vol. 12mo. The Tatler. 1 vol. 12mo. History of Bonaparte. 1 vol. 8vo. Lecture on Astronomy. 1 vol. 8vo. Burlamaqui on Laws. 2 vols. 8vo. Martin's Gazetteer of Virginia. 1 vol. 8vo. Moore's Universal Geography. 1 vol. 8vo. Millot's General History. 5 vols. 8vo. Duncan's Cicero. 1 vol. 8vo. Guthrie's Grammar. 1 vol. 8vo. Conquest of Mexico. 2 vols. 8vo. Dufief's Nature Displayed. 2 vols. 8vo. Treatise on the Vine. 1 vol. 8vo. The American Gardener. 1 vol. 12mo. Hewey's Meditation. 1 vol. 12mo. The Female Spectator. 1 vol. 12mo. Poetical Works by T. Pindar. 1 vol. 12mo. Jackson's Messages. 1 vol. 12mo. Essays by John Locke. 2 vols. 8vo. Siamese Tales. 1 vol. 16mo. The Death of Abel. 1 vol. 16mo. The Works of Horace. 1 vol. 16mo. Rural Sports. 1 vol. 12mo. History of Rasselas. 1 vol. 12mo. Young's Dictionary. 1 vol. 8vo. History of the Heathen Gods. 1 vol. 16mo. Saville's Miscellanies. 1 vol. 12mo. Practical Grammar of the English Tongue. 2 vols. 12mo. Vicar of Wakefield. 1 vol. 12mo. Homer's Iliad. 1 vol. 16mo. Evenings at Home. 3 vols. 12mo. Method of Teaching and Studying Belles-Lettres. 4 vols. 12mo. Milot's History of England. 4 vols 12mo. Florist's Guide. 2 vols. 8vo. Pomological Magazine. 3 vols. 8vo. Greek Testament. 1 vol. 12mo. Miscellaneous pamphlets, 40.

Cummings, Rev. Joseph, Pres. of Wesleyan University, of Middletown, Conn. Annual Catalogues of the Wesleyan University. 15 pamphlets. 8vo. The Wesleyan Olla Podrida. 3 pamphlets. 8vo. Ceremonies and Speeches at the Laying of the Corner Stone and Dedication of Orange Judd Hall of Natural Sciences, May 5, 1870.

Department of the Interior. U. S. Coast Survey, 1868–69. 1 vol. 4to. Diseases of Cattle in U. S., 1869–70. 1 vol. 4to. Compendium of the Ninth Census of U. S., 1870-71. 1 vol. 8vo. Commercial Relations, 1871–72. 2 vols. 8vo. Senate Miscellany. 2d Sess., 42d Cong., 1871–72. 1 vol. 8vo. Report of the Department of Agriculture, 1872. 1 vol. 8vo. Affairs in the Late Insurrectionary States, 1872. 13 vols. 8vo. House Miscellaneous. 2d Sess., 42d Cong., 1871–72. 4 vols. 8vo. Foreign Relations of the United States, 1872–73. 6 vols. 8vo. Report of the Secretary of War, 1872–73. 2 vols. 8vo. Report of the Secretary of the Interior. 1872–73. 2 vols. 8vo. Annual Reports, 3d Sess., 42d Cong., 1872–73. 1 vol. 8vo. Executive Documents, 3d Sess., 42d Cong., 1872–73. 4 vols. 8vo. Estimates of Appropriations. 1873–74, 1872–73. 1 vol 8vo. List of Private Claims from 32–41 Cong. 1 vol. 4to, 1872–73. Reports of Explorations and Survey for a Ship-Canal, Isthmus of Darien, 1872–73. 1 vol. 4to. House Journal, 3d Sess., 42d Cong., 1872–73. 1 vol. 8vo. House Miscellaneous, 3d Sess., 42d Cong., 1872–73. 3 vols. 8vo. Senate Miscellaneous. 3d Sess., 42d Cong., 1872–73. 1 vol. 8vo. Senate Documents. 3d Sess., 42d Cong., 1872–73. 1 vol. 8vo. Senate Reports, 3d Sess., 42d Cong., 1872–73. 3 vols. 8vo. Senate Journal, 3d Sess., 42d Cong., 1872–73. 1 vol. 8vo. Report of Committees, 3d Sess., 42d Cong., 1872–73. 3 vols. 8vo.

Peabody, Mrs. F. Horticultural Register, 27 numbers. Annals of Electricity, 31 numbers. Putnam's Monthly, 14 numbers. European Agriculture and Rural Economy. 10 numbers. The Monthly Miscellany, 12 numbers. Western Quarterly Review. 25 numbers. American Repertory, 24 numbers. Christian Examiner, 93 numbers. American Journal of Science, 26 numbers. Gardener's Monthly, 66 numbers. Journal of Science and the Arts, 17 numbers. The Horticulturist, 54 numbers. The Farmer's Cabinet, 45 numbers. Monthly Religious Magazine, 71 numbers. American Quarterly Review, 38 numbers. The Chemist, 42 numbers. Magazine of Horticulture, 135 numbers. Magazine of Domestic Economy, 25 numbers. Hunt's Merchant's Magazine, 33 numbers. The Mechanic's Magazine, 27 numbers. Library of Useful Knowledge, 173 numbers. New England Magazine, 8 numbers. The Knickerbocker Magazine, 7 numbers. London Journal, 17 numbers. Edinburgh Journal of Science, 12 numbers. Salem Directories, 1855, 1857, 1859, 1861, 1864, 1866. Mass. Register, 1823, 1825. English Exercises. 1 vol. 12mo. Beloke's German Grammar. 1 vol. 8vo. Burns' Poems. 1 vol. 16mo. Addick's French Elements. 1 vol. 8vo. Live and Learn. 1 vol. 12mo. Miscellaneous pamphlets, 900.

TAFT, S. H., of Humboldt, Iowa. Catalogue of the Officers and Students of Humboldt College for 1873–74.

U. S. PATENT OFFICE. Official Gazette, July 21, 28, Aug. 4, 11, 1874.

WATERS, J. G. Boston Almanacs, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1859. Salem Directories, 1850, 1855, 1859.

WILLIAMS, H. L. The International Railway Guide, 11 numbers. Miscellaneous pamphlets, 37. Miscellaneous almanacs, 7.

WILLSON, E. B. Record of the Unitarian Worthies, Aug., 1874.

By Exchange.

BOSTON PUBLIC LIBRARY. Twenty-second Annual Report, 1874.

GEOLOGICAL SURVEY OF CANADA. Palæozoic Fossils. Vol. ii, pt. 1, Aug., 1874.

INSTITUT HISTORIQUE IN PARIS. L' Investigateur, 40e Anneé, No. iii, Avril-Mai, 1874.

LITERARY AND PHILOSOPHICAL SOCIETY OF MANCHESTER. Memoirs of, 3d Series, Vol. iv, 1871. 1 vol. 8vo. Proceedings of, Vols. viii, ix, x, xi, xii. 1869-73. 6 vols. 8vo.

NATURFORSCHENDER VEREIN IN RIGA. Correspondenzblatt, xx Jahrg.

SENCKENBERGISCHE NATURFORSCHENDE GESELLSCHAFT IN FRANKFURT. Abhandlungen, Bd. ix, No. 1-2, 1873.

SOCIÉTÉ D' ACCLIMATATION IN PARIS. Bulletin Mensuel, 3me Série, Tome i, Avril, 1874.

PUBLISHERS. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Observer. Salem Post.

Mr. CALEB COOKE mentioned that among the recent additions to the cabinets may be specified the donation from Samuel Emery, of Salem, — a Franklin medal. This medal was adjudged as a reward of merit, by the Boston school committee, to Stephen Emery, 1799. Also a longitude and azimuth compass made by R. Walker.

Rev. E. C. BOLLES presented some interesting relics, collected by him, from Chester, in England, consisting in part of pieces of pottery, human bones, etc., of the Roman period; also stereoscopic views of the Salisbury cathedral and other sites of historic interest in that vicinity, including Old Sarum and Stonehenge, the supposed ruins of an old Druidical temple. He described the Blackmore Museum in Salisbury, and exhibited a stone implement from one of the mysterious "barrows" or burial mounds on the plain about Stonehenge. These mounds are of different forms, and probably different ages, and are the most conspicuous objects in the melancholy scenery of Salisbury Plain. The soil is chalk, overlaid by a thin, crispy turf. Some of the barrows have been opened; and by searching in the half filled excavation in one of these diggings, Mr. Bolles found this spearhead, roughly chipped from flint, and exhibiting in its weathered surface the marks of great antiquity. It is about five inches long and two wide. Mr. Putnam, to whom it was submitted, was uncertain whether to consider it a complete implement of the rudest stone age, or an unfinished one of a later period. Mr. Bolles made these relics the subject of some unpremeditated remarks of great interest, and we hope that he may be induced at some future meeting of the Institute to give a more extended account of his recent researches amid the ancient haunts of the Druids and the Romans in England.

The President alluded to the recent donation from a few friends of a valuable cast of the "Rosetta Stone." The stone of which this is a cast was discovered near Rosetta, in lower Egypt, in August, 1799, and is now deposited in the British Museum. The inscription is in three languages, Hieroglyphic, Demotic, or the language of the country, and Greek. Being counterparts, or repetitions of each other, they give the main key and help in deciphering the hieroglyphics of ancient Egypt. The event recorded by the Rosetta stone, the decree issued at the coronation of Ptolemy Epiphanes, took place at Memphis in March, 193 B. C. This cast is one of Ward's series, and was made at Rochester, N. Y.

The PRESIDENT called the attention of the meeting to the decease of Prof. JEFFRIES WYMAN, of Cambridge, a valued corresponding member, which occurred at Bethlehem, N. H., on the 4th inst., in his sixty-first year. He spoke of the great loss which the Institute and science had sustained in his death, and alluded to the very prominent positions which he had held, and his worth both as a man and a scientist.

Vice President F. W. PUTNAM gave an account of the scientific work of Prof. Wyman, alluding especially to the great care with which he conducted all his researches; his extreme cautiousness; the remarkable thoroughness of his work and the extraordinary modesty, but at the same time amazing force, with which he advanced his views. As an anatomist and physiologist he was without a superior, and he was a most careful and profound investigator in archæology, to which science he had devoted the later years of his life. His work upon the ancient shell heaps of Florida, which is now being printed by the Peabody Academy of Science, will be a lasting monument to him as an archæologist, and will exhibit the care with which he performed his investigations and deduced his results.

Mr. PUTNAM then offered the following resolutions, which were unanimously adopted:—

Whereas, the ESSEX INSTITUTE has learned with deep regret of the death of its distinguished corresponding member, Professor JEFFRIES WYMAN, therefore,

Resolved, That in the death of JEFFRIES WYMAN, the Institute acknowledges the loss of a most honored member, and laments that science is deprived of the continued labors of one of the most upright and conscientious of men, most cautious of investigators, and most concise of expounders in his chosen departments of physiology, comparative anatomy, embryology and anthropology.

Resolved, That a copy of these resolutions be sent to the bereaved family of our late member, as the expression of our condolence with them in their great affliction.

Adjourned.

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REGULAR MEETING, MONDAY, SEPTEMBER 21, 1874.

MEETING this evening at 7.30 o'clock. PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence:—

From James S. Bryant, Hartford, Conn., Sept. 12; Joseph Cummings, Middletown, Conn., Sept. 15; J. W. Fielder, Everett, Sept. 10; Samuel Hart, Hartford, Conn., Sept. 16; C. H. Higbee, Boston, Sept. 21; Alfred M. Mayer, South Orange, N. J., Sept. 19; S. M. Watson, Portland, Me., Sept 12.

The LIBRARIAN announced the following additions:—

By Donation.

HART, SAMUEL, of Trinity College, Hartford. Address before the House of Convocation of Trinity College, July 1, 1874, by Rev. Wm. Payne, D.D.

HOADLEY, C. J., of Hartford, Conn. Legislative Documents of Conn., 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874. 20 vols. 8vo. Catalogue of Conn. Volunteer Organizations, 1861–65. 1 vol. 8vo. History of Conn. during the Recent War, 1861–1865. 1 vol. 8vo. New Haven Colonial Records, 1638–1743. 7 vols. 8vo. Genealogical Notes by N. Goodwin. 1 vol. 8vo.

U. S. PATENT OFFICE. Official Gazette, Aug. 15, 1874.

WOLCOTT, J. W., of Boston, Mass. Report on the Statistics of Labor, 1873. 1 vol. 8vo. Annual Report of the Board of State Charities, 1–9. 9 vols. 8vo. Thirtieth Registration Report of Mass., 1871. 1 vol. 8vo. Miscellaneous pamphlets, 12.

WATERS, J. G. Chicago Directory, 1863–64. 1 vol. 8vo. The Christian Inquirer, 60 numbers. Almanacs, 13. Miscellaneous pamphlets, 34.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the Semi-Annual Meeting, held in Boston, Apr. 29, 1874.

CANADIAN INSTITUTE. The Canadian Journal of Science, Literature and History. Vol. xiv, No. 3., Aug., 1874. 8vo. Toronto, 1874.

PUBLISHERS. Forest and Stream. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Salem Observer. Salem Post.

Among the donations announced to the cabinets may be specified several articles illustrative of the costumes of central Turkey, presented through the Rev. E. S. Atwood, from Miss E. M. Pierce, of the Mission Station at Aintab, Central Turkey, formerly a resident of Salem, and a teacher in one of the public schools. These consisted of a pair of native boots, a pair of native shoes, also of cobcob; ink and penholder, knife, comb, and specimens of native cloth; and a Turkish telegram.

Mr. ROBINSON states that a new fern has been received from Dr. C. C. Parry, collected by him in Southern Utah. It is named by Prof. Eaton "*Notholæna Parryi.*

Caroline A. Watson, of Salem, was elected a resident member.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., OCTOBER, 1874. NO. 10.

One Dollar a Year in Advance. 10 Cents a Single Copy.

FIELD MEETING AT MANCHESTER, FRIDAY, OCTOBER 2, 1874.

THE closing field meeting of the season was held this day, at Manchester, by the kind invitation of Mr. Lewis N. Tappan and other citizens of that town. Manchester is one of the most attractive places in this county to hold a meeting. It is a locality exceedingly rich in the various objects which contribute to the enjoyment of the lovers of natural history. The proximity to the woods, on the one side, which abound with floral treasures, varying with the different seasons of the year, and the diversified soil and aspect; the rocky and craggy hills, the meadows and the lowlands, each having its distinct flora; on the other side the seashore, with its bold, rocky cliffs, and the intervening beaches, cooled during the heated months by the invigorating breezes from the ocean, offer to the students of the marine flora and fauna much to study and investigate.

The day was unpropitious, and the attendance was accordingly smaller than usual. The party was welcomed at the station by Messrs. Tappan, Merrill, Price and others, and were conveyed to various points of attraction in carriages provided for the occasion. Some went to the seashore, where "Eagle Rock" and the several fine beaches offered great attractions, more especially "the musical sands" which are situated on part of what is known as the "Old Neck Beach," and are alluded to in the notice of the meeting on Thursday, Aug. 2, 1866;* some to the woods, noticing especially the famous bowlder named "Agassiz Rock;" also large and fine specimens of the tupelo tree (*Nyssa multiflora*) and of the sassafras tree (*Sassafras officinale*); others went in different directions, as inclination dictated.

Lunch was had at the Town Hall at about one o'clock, tea and coffee being provided by citizens of the town, and the afternoon session was held at the same place at two and one-half o'clock.

In the absence of the President, Vice President F. W. **Putnam** took the chair and made the opening address.

He stated that a field meeting was held at Manchester, Aug. 28, 1849, the first year of holding these meetings, being the third of this series. The place of rendezvous was at the point, on Burley Smith's farm. The adjacent shore was dredged to procure the mollusca and other marine animals; the late Mr. William Stimpson was present and made his first dredging; the forerunner of his extensive and valuable services in sea dredging, which has so indelibly associated his name with the marine zoology of New England.

In July, 1856, through arrangements made by Mr. Jonathan French, jr., principal of the public high school, another field meeting was held in the high school house, a building placed upon the brow of an elevation, a short distance from the thickest settlement of the town, and from which is a most beautiful landscape and water view. This meeting was memorable as the first of the meetings attended by ladies, the excursions having previously been confined to small parties of gentlemen, travelling in private conveyances.

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* See Proceedings of Essex Institute, Vol. v, page 57.

A meeting was also held in the town in the following summer of 1857, and again on Thursday, August 2, 1866, soon after the completion of the laying of the Atlantic cable, and resolutions were passed on the successful result of that undertaking. At this meeting the late Chief Justice Chase and other distinguished persons were present.

The chairman then called on Prof. E. S. MORSE, of Salem, who spoke at some length upon the cause of the glacier scratches found on our pasture bowlders, illustrating his remarks by explanatory diagrams on the blackboard. The proofs of the glacial theory, the action of the glaciers, the origin of moraines, the formation of icebergs and incidental questions connected with the topic, were ably presented. In the course of his remarks he made a statement not generally known, that the American Indians were acquainted with the fact that the glacial scratches on ledges and bowlders run north and south, and that they used them as a guide. The fact is not referred to in any work of science, or aboriginal history, but Mr. Morse received it from an old gentleman, at Portland, whose grandfather remembered that the Indians sometimes found their way through the forests by scratching away the earth over the rock in order to note the direction of the smooth scratches.

The speaker also alluded to the somewhat current impression that water will wear away a rock, and showed that instead of this the softer portions of rock are worn away by the action of sand and gravel washing over it.

In reply to a call for an account of the large bowlder in the Manchester woods which had been visited by the party, the Secretary, Mr. JOHN ROBINSON, stated that he had taken great pleasure, during the morning, in visiting the curious bowlder in the woods on the road to Essex. After a pleasant but difficult walk through woods and clearings, and finally by a scramble to the summit of the hill upon which many bowlders rest they came to the rock designated. It is about half the size of Ship Rock, so justly celebrated, and in shape almost a cube, of perhaps twenty feet on a side, one end resting upon the ledge which forms the hill, and the other propped up about two feet by a wedge-shaped rock, the sharp end downwards; the base of the thus inverted wedge is against the under side of the bowlder. Beneath is room for two persons to crawl, and the glacial scratches upon the ledge, being so well protected, are nearly perfect, while a sidelong glance shows the surface of the ledge to be quite smoothly polished. Mr. Robinson, after speaking of the importance of such characteristic bowlders in demonstrating the glacial theory, and of the interest expressed by the late Prof. Agassiz while visiting this rock some years since, made, at the suggestion of some residents of Manchester, the following motion, which was unanimously accepted, after being seconded by Mr. Lewis N. Tappan, who offered some remarks on the subject, including reminiscences of Prof. Agassiz' visit to the spot: —

Voted, that the bowlder visited during the morning by a party from the Essex Institute Field Meeting, held at Manchester, Oct. 2, 1874, be named and hereafter known as "Agassiz Rock."

Mr. **Putnam** on announcing the acceptance of the vote alluded to the marked propriety of attaching the name of Agassiz to so interesting a bowlder, and stated that hereafter, in all the publications of the Essex Institute, this bowlder would be known by the name now bestowed, and that in due time the name would be incorporated in works upon the subject of glacial action in New England.

Rev. Dr. **Bolles**, of Salem, was the next speaker, and took as his theme the reason why leaves change their color in the autumn, and why it is when the time has come that they fall from the trees. He explained that these things were not occasioned by frost, as so many suppose. Frost congeals foliage, rendering it flaccid, and it takes on the color of decay. Nor is it any process that comes from outside the leaf, but the result of certain changes that take place in the leaf itself. The leaf is a living thing, the workman of the plant, from which it gets its growth, blossom, and fruit. Dr. Bolles then entered into a minute description of a leaf, its framework and covering, the vegetable cells, from which it receives its color, and showed how, from some change in these cells the leaf ripened and took on the glowing colors of autumn foliage. He spoke of the assistance received in the study of this subject from the spectroscope, an instrument so powerful that it reaches and penetrates the mysteries of the planets, yet so delicate as to take cognizance of the chemistry of a tiny leaf-cell, unknown save as we analyze it through this wonder-working glass. The doctor also explained how, at the ripening of the leaf, a cork-like substance is formed at the junction of the stem with the twig, until the leaf is ready to fall at the slightest breath, without the bleeding and loss which would ensue from the violent disruption of the foliage from the tree.

The CHAIRMAN gave a description of a salamander which had been left by some one upon the stand. In answer to questions he explained that it was not poisonous, and indeed could not be made to bite. He then traced the distinctions between the salamander and the toad and frog, and between various varieties of salamanders common to this vicinity, giving an account of their development and habits.

Dr. BOLLES called attention to a new work undertaken by the Institute, in the forming of a museum representing the history of various manufactures, and said the Institute would be glad to receive contributions. The intention is to make a collection of pottery, types of different kinds of stone, china and earthenware; articles for kindling fire,—antique specimens of matches, tinder boxes, etc.; old paper,—writing and printing. Articles which possessors might deem worthless would perhaps be of service in making a link of great value.

On motion of Dr. BOLLES it was

Voted, That the thanks of the Essex Institute be tendered to Messrs. John Price, Lewis N. Tappan, J. W. Merrill, and Cheever, and the ladies of the town who had so kindly aided in the arrangements of the day. Also to the town authorities for the use of this hall.

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REGULAR MEETING, MONDAY, OCTOBER 5, 1874.

THIS evening was appropriated to the commemoration of the first centennial of the revolution—the one hundredth anniversary of the meeting, in Salem, of that memorable body, which here formally and finally resolved itself into a Provincial Congress, and thereby established in Massachusetts "a government of the people, by the people, and for the people."

The hall was well filled. Henry Wheatland presided, and a fine double quartette choir, under the direction of M. Fenollosa, Esq., who played a piano-forte accompaniment, sang some patriotic pieces in excellent style, which received warm applause. The exercises were opened with the singing of the following words, adapted for the occasion to the tune of "Scots wha hae wi' Wallace bled:"

Men that dare with wrong to fight;
Men that battle for the right;
Gird ye on your armor bright;
        Hark the Tocsin's call!
Tyranny with latest breath,
Struggling onward to its death,
Still with frantic madness saith,
        Liberty shall fall!

Right and wrong in desperate strife;
Front to front, and life for life,
Reckless of the ruin rife;
        Meet in conflict dire!
Lighting up our western sky;
Harbinger of vict'ry nigh;
See! the flames are mounting high;
        Kindles Freedom's fire!

What though King's strong arm assail;
This the light makes tyrants pale;
God and Justice will prevail,
        Now and evermore.
Every form of wrong shall die!
Perish every vaunted lie; —
Lo! the radiance from on high
        Lights Columbia's shore.

Men that dare with wrong to fight;
Men that battle for the right;

Now is past Oppression's night;
Breaks the coming morn!
Look, behold the morning star
Freedom's pathway gilds afar;
While behind her conquering car,
See a Nation born!

Dr. Wheatland then introduced ABNER C. GOODELL, Jr., Esq., Vice President of the Historical Department, who proceeded to deliver an elaborate and most admirable oration on the subject of the commemoration, which was attentively listened to, and at various points emphatically applauded. This valuable contribution to our historical literature, in which was given a minute history of the occurrences which led to the meeting whose one hundredth anniversary the society had met to celebrate, will soon be published in the "Historical Collections" of the Institute, and be accessible to all who take an interest in the great events here transacted and commemorated.

Mr. Goodell first drew from the Greek mythology a parallel between the story of the Greek founder of Athens and the genius of independence in creating the harmonious confederation of States. He followed this with a review of the relations existing between Great Britain and the American colonies one hundred years ago, especially what took place in Salem at that time—the removal of the General Court, etc. Speaking of this court, he said, When the whole Assembly met here in June, the upper room was the hall of the representatives. The council chamber may have been below, or more likely in the old tavern opposite, on the site now covered by the Stearns Building; while the governor, doubtless, had rooms not far distant, or possibly he may have remained at his headquarters in Danvers. On this occasion; viz., in October, the whole body of legislators, consisting of the assembled ninety, found ample space in the court room, which was fifty feet long and thirty feet wide. The Assembly organized; John Hancock was chosen chairman and Benjamin Lincoln, clerk. A committee was then appointed to consider the governor's proclamation, and to consult on measures to be adopted, and the Assembly again adjourned. On Friday, the 7th of October, the committee reported four resolutions, concluding with the declaration that the grievances which they set forth were such as "in all good governments," had "been considered among the greatest reasons for convening a Parliament or Assembly," and that the proclamation was further proof of the necessity of "most vigorous and immediate exertions for preserving the freedom and constitution" of the province. The resolutions were immediately adopted. Having thus solemnly renounced the authority of Parliament, and affirmed the fundamental right of the people to institute a government, when, in their judgment the regular administration had overstepped the limits of the constitution, they adjourned to more comfortable quarters at Concord, to meet on the following Tuesday. Here they continued their sittings, with a few weeks' intermission, until the 10th of December. At Concord they organized the Congress by raising Hancock to the presidency, and made Lincoln their secretary. Their progress toward practical independence was now sure and speedy. Before the end of October, all constables and collectors of taxes had submitted to their order to withhold payment from Harrison Gray, the province treasurer, and to return their collections to Henry Gardner, who soon after was appointed receiver general; and with closed doors and under a solemn pledge of secrecy, they had resolved upon the momentous subject of "the most proper time" to procure arms and ammunition by unanimously adopting a report that "now is the time!" By midsummer three sessions had been held, had transacted business, and finally dissolved. On the day of their dissolution they again assembled, by the recommendation of the Continental Congress, as an independent government under the charter. Before this reorganization, the established tribunals of justice, which had either ceased to hold sessions or were disregarded by the people, had been replaced by a Court of Inquiry, to insure the preservation of order; the establishment of a navy had been favorably reported upon, and the great work of raising and equipping an army had been accomplished. Under the new style of government, the council and representatives removed the judges who had been appointed by royal governors, and issued commissions to new magistrates of their own selection. Thus, in less than ten months from the taking of their first bold step at Salem, the new régime was in the full exercise of the three great functions of government — legislative, judicial and executive. While the Legislature was thus employed, the people were busy arming and organizing the militia. Through the fall and winter, colonels of regiments and other military officers, who were not in known sympathy with the popular movement, were either forced to resign, or the men under their command voluntarily disbanded and reorganized under other leaders. New companies were started, beginning with an artillery company in Marblehead, for which subscriptions were opened early in November. The expedition of Colonel Leslie, on the 26th of February, 1775, and the affair at the North Bridge in Salem, when the first bloodshed of the revolution occurred, present a theme inviting discussion, when the anniversary of that day arrives. Mr. Goodell recapitulated the events of these nine months as follows:—

Here, we have seen, were convened the last Provincial Assembly and first Provincial Congress; here were chosen the first delegates to the Continental Congress; here the assembled province first formally renounced allegiance to the Imperial Legislature; here was made the first attempt to enforce the last oppressive acts of Parliament, and here that attempt was resisted; here, though no mortal wound was given, was shed the first blood of the American Revolution; here was first organized the nucleus of an army; and here the banner of independence first spoke defiance, as it flapped and rustled in the wind.

The choir next sang a German National Hymn, from Mendelssohn's four part songs, commencing,

"Thro' deepest gloom the night wind cold," etc.

In conclusion the choir sang Julius Eichberg's National Hymn,

"To thee, O country."

The President then invited the company to partake of a basket collation which had been provided in the ante-rooms, and a pleasant season of social enjoyment terminated this interesting commemoration.

Otis P. Lord of Salem, Lewis N. Tappan of Manchester and J. W. Merrill of Cambridge were elected resident members.

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REGULAR MEETING, MONDAY, OCTOBER 19, 1874.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From E. P. Boon, New York, Oct. 15; James S. Bryant, Hartford, Sept. 21; C. H. Dall, Boston, Sept. 21, 24; C. C. Dawson, New York, Oct. 15; Charles H. Higbee, Boston, Oct. 13; F. E. Hotchkiss, New Haven, Conn., Oct. 3; G. M. Levette, Indianapolis, Ind., Sept. 26; Alfred M. Mayer, Hoboken, N. J., Oct. 3; Daniel A. Rogers, Chicago, Ind., Sept. 24; T. W. Silloway, Boston, Oct. 3, 7; Mary W. Towne, Sept. 30; Bordeaux, Société Linneénne, Sept. 14; Kjobenhavn, det Kongelige Danske Videnskabernes Selskab, Sept. 7; New York Lyceum of Natural History, Oct. 12; New York State Library, Sept. 25; Somersetshire Archæological and Natural History Society, Taunton, Sept. 14; Trinity College Library, Oct. 6; Worcester Public Library, Oct. 2, 7.

The LIBRARIAN reported the following additions:—

By Donation.

ANAGNOS, M., Boston. Reports of Blind Institutions, 46.

BOLLES, E. C. Principles of Masonic Law, by Mackey. 1 vol. 8vo. Hymns for the Sanctuary. 1 vol 8vo. Putnam's Phalanx. 1 vol. 8vo. Gloria Patri. 1 vol. 8vo. Portland Reference Book, 1852–53. 1 vol. 12mo. Autobiography of L. Norton. 1 vol. 12mo. Life of Wm. Penn, by T. Clarkson. 1 vol. 8vo. Mrs. Marsh's Novels. 2 vols. 8vo. The Widower. 1 vol. 8vo. Miscellaneous pamphlets, 76.

BRYANT, JAMES S., Hartford. Mining Statistics west of the Rocky Mountains, 1870. 1 vol. 8vo. American Sunday School Magazine, 1824. 1 vol. 8vo. Burgh's Dignity. 1 vol. 8vo. Bellamy's True Religion. 1 vol. 12mo. Willison's Meditations. 1 vol. 12mo. Murray's English Grammar. 1 vol. 12mo. Butler's General History. 1 vol. 16mo. An Autobiography by John B. Gough. 1 vol. 12mo. Adam's Latin Grammar. 1 vol. 16mo. Memoir of Rev. M. Henry. 1 vol. 12mo. Blair's Lectures. 1 vol. 16mo. English Reader. 1 vol. 12mo. Beauties of Creation. 1 vol. 12mo. Zion's Pilgrim. 1 vol. 16mo. Solyman and Almena. 1 vol. 16mo. William's Sermon. 1 vol. 8vo. Farewell Letters by W. Ward. 1 vol. 12mo. Webster's American Selection. 1 vol. 12mo. History of Animals. 1 vol. 12mo. Dwight's Geography. 1 vol. 12mo. The Battle of Bunker Hill; a Poem by R. Emmons. 1 vol. 12mo. Pilkington's Historical Beauties for Young Ladies. 1 vol. 12mo. Thoughts on Divine Goodness. 1 vol. 12mo. Flint's Dictionary. 1 vol. 12mo. Dwight's Psalms. 1 vol. 16mo. The Widow of the Village. 1 vol. 16mo. Nettleton's Village Poems. 1 vol. 16mo. Hartford Directories, 1867, 1868, 1869, 1870, 1871, 1872, 1873. Hartford City Guide, 1871. 1 vol. 12mo. Macgowan's Life of Joseph. 1 vol. 12mo. Miscellaneous pamphlets, 86.

COOKE, C. Rockford City Directory for 1869. 1 vol. 8vo.

DAWSON, CHAS. C., New York. Dawson Family Records, by donor. 1 vol. 8vo. Albany, 1874. Guide Books, 27. Miscellaneous pamphlets, 38.

ELLIOTT, E. B., Washington, D. C. Report on the Commerce and Navigation of the United States, 1873. 1 vol. 8vo. Report on Immigration, by E. Young, 1871. 1 vol. 8vo. Monthly Reports of the Chief of the Bureau of Statistics, Treasury Department, July-Dec., 1873, Jan.-May, 1874. 11 pamphlets.

GREEN, Dr. S. A., of Boston, Mass. Forty-Sixth Annual Report of the Controller's of Public Schools of Penn., 1864. 1 vol. 8vo. Annual Report of the Boston City Hospital, 1873–74. 1 vol. 8vo. Miscellaneous pamphlets, 26.

HOTCHKISS, FRANK E., of New Haven, Conn. Year Book of the City of New Haven, 1873. 1 vol. 8vo. Report of the Board of Education of Conn., 1874. 1 vol. 8vo. Report of the Board of Education of the New Haven City School District, 1874.

LEE, F. H. Dexter Smith's Paper, 8 numbers. Folio, 15 numbers. Musical Bulletin, 9 numbers. Brainard's Bulletin, 17 numbers. Miscellaneous pamphlets, 15.

LEE, JOHN C. Commercial Bulletin, Sept. 5, 12, 19, 1874.

LEVETTE, G. M., Indianapolis, Ind. Geological Survey of Indiana, 1873. 1 vol. 8vo. Indiana Agricultural Reports, 1873. 1 vol. 8vo.

MILES, W. A., New York. New York Directories, 1871, 1872, 1873. 3 vols. 8vo.

MERRITT, L. F. Shanghai Budget, June 20, 27, July 4, 11, 18, 1874. Essex County Mercury, several numbers.

PALFRAY, C. W. Miscellaneous pamphlets, 27.

PUTNAM, F. W. Annual Report of the Indianapolis Board of Trade, Jan., 1874. Mineral, Manufacturing and Agricultural Resources of Indiana, by E. T. Cox, 1873.

PUTNAM, GEO. G. Democratic Review, 12 vols. 8vo.

ROBINSON, JOHN. Miscellaneous pamphlets, 300.

SMITH, Prof. J. L., Louisville, Ky. Scientific Researches. 1 vol. 8vo. 1873.

SPENCE, F. H. Catalogus Universitatis Brunensis, 1873. 8vo pamph.

STICKNEY, M. A. Miscellaneous pamphlets, 150.

U. S. PATENT OFFICE. Official Gazette, Sept. 1, 8, 15, 22, 29, 1874.

WATERS, J. G. Speeches on the Indian Bill, 1830. 1 vol. 8vo. Youth's Instructor. 1 vol. 12mo. Sermons by J. Flint. 1 vol. 8vo. The Seaman's Daily Assistant. 1 vol. 8vo. Mass. Register, 1816. 1 vol. 12mo. Moore's Strictures, 1 vol. 12mo. Bowditch's Practical Navigator. 1 vol. 8vo. American Coast Pilot. 1 vol. 8vo. Moore's Navigation. 1 vol. 8vo. Coaster's Companion. 1 vol. 8vo. Miscellaneous pamphlets, 150.

By Exchange.

AMERICAN PHILOSOPHICAL SOCIETY OF PHILA. Proceedings of, Vol. xiv, No. 92. Jan.-June, 1874. 8vo pamph.

BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin of, Vol. ii, No. 2, 1874. 8vo pamph.

NEW YORK STATE LIBRARY. Eighty-sixth Annual Report of the Regents of the University. 1 vol. 8vo. 1873. Twenty-third Annual Report of the New York State Cabinet of Natural History, 1869. 1 vol. 8vo. Miscellaneous Reports, 3.

SOMERSETSHIRE ARCHÆOLOGICAL AND NATURAL HISTORY SOCIETY. Proceedings for 1873. 1 vol. 8vo.

PUBLISHERS. American Naturalist. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Post. Salem Observer.

George H. Woods, of Salem, was duly elected a resident member.

Prof. E. S. MORSE, being called upon, gave a very interesting account of the theory of evolution, basing his remarks principally upon the structural development of birds and its relations to that of reptiles and other great natural families, both geological and extant. It was difficult to decide which most to admire, the fluency and earnestness of his utterance, or the wonderful facility and rapidity of his illustrations with the pencil.

On motion of Rev. E. S. Atwood, it was unanimously voted that an invitation be extended to the Massachusetts Universalist Convention, now in session in Salem, to visit the rooms of the Institute and examine the various collections of the Association.

Rev. E. C. Bolles then gave a very interesting and eloquent account of his observations among the various scientific collections of London, during his recent European tour. He spoke particularly of the immense library of the British Museum, the South Kensington and Bethnal Green Museums, the National Gallery of Paintings, the Jermyn Street Museum with which Huxley is connected, the East India Museum and the Kew Botanic Gardens, describing their collections, explaining their arrangement and purposes, and expatiating eloquently on their influence upon the useful education of the public. The sums spent for these collections by the government, the men of wealth and the friends of science, seem almost fabulous, and their perfection in the several departments is wonderful.

Mr. Bolles concluded by moving that a new department be added to the Institute, or put in charge of a curatorship already established, viz.: a museum of Technology, or Applied Science. Such a collection had been commenced on a small scale and arranged in the anteroom in such a manner as to make the plan intelligible, and the audience were invited to examine it after the adjournment. The specimens illustrated the different processes in the manufacture of porcelain and pottery, from the crude clay to the highly ornamented and finished article; also the several processes in chromo lithography. Mr. Bolles likewise brought from Europe for this department about a thousand specimens of fibres, including those on which the British government has expended so much experiment in India, which will be an important and valuable nucleus for the new department.

The plan excited much interest and was regarded with high favor. Several gentlemen announced that they already had, or could easily procure, suites of specimens in various arts, which they would be glad to add to the Institute treasures.

The subject was referred to the Directors, and there is a fine prospect of commencing the new department with valuable contributions, and under the most favorable auspices for constant and large additions.

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LISTS OF BIRDS OBSERVED AT VARIOUS LOCALITIES CONTIGUOUS TO THE CENTRAL PACIFIC RAILROAD, FROM SACRAMENTO CITY, CALIFORNIA, TO SALT LAKE CITY, UTAH.

BY ROBERT RIDGWAY.

THE observations upon which the following notes are based were made in connection with the field work of the U. S. Geological Exploration of the Fortieth Parallel, in charge of Mr. Clarence King, U. S. Geologist, during portions of the years 1867, 1868 and 1869.

The present paper is a mere abstract of that portion of the zoölogical report[*] of the Survey relating to the character and distribution of the local avifaunæ encountered along the route of exploration, and is published in its present form in order to acquaint ornithologists, as soon as possible, with the results of ornithological investigations made by the Expedition.

The country traversed by the Survey in the course of its field work is embraced chiefly between the parallels of 39° and 42° North latitude, and the meridians of 111° and 122° West longitude. The localities at which observations were made upon the fauna are classified as follows:—

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[*] In press.

I. THE SACRAMENTO VALLEY.

a. Outskirts of Sacramento City.
b. Across the plains from Sacramento to the Sierra Nevada.

II. THE SIERRA NEVADA.

a. The western foot-hills. *b.* The pine region.
c. The summit of Donner Pass. *d.* The eastern slope.

III. WESTERN NEVADA (*area of the eastern drainage of the Sierra Nevada, or western Basin drainage*).

a. Eagle Valley. *b.* Carson Valley. *d.* Washoe Valley.
e. Truckee Meadows (above the Virginia Mountains).
f. Truckee Valley (below " " "
g. Adjacent plateaux. *h.* Islands of Pyramid Lake.

IV. EASTERN NEVADA, SOUTHERN IDAHO AND NORTHWESTERN UTAH (*interior Basin drainage*).

a. West Humboldt Mountains. *b.* Toyabe Mountains.
c. Ruby Mountains. *d.* East Humboldt Mountains.
e. Upper Humboldt Valley.
f. Lower Humboldt Valley, "Sink" of the Humboldt.
g. Soda Lake, Carson Desert. *h.* Ruby and Franklin Lakes.
i. Thousand Spring Valley. *j.* "City of Rocks," Southern Idaho.
k. Deep Creek, Northwestern Utah.

V. EASTERN UTAH (*Wahsatch and Uintah drainage, or eastern Basin drainage*).

a. Salt Lake valley. *b.* Islands in the Great Salt Lake.
c. Parley's Park (Wahsatch Mountains).
d. Pack's Cañon (western spur of Uintah Mountains).
e. Kamas Prairie. *f.* Provo Cañon (pass of the Provo River).

I. SACRAMENTO VALLEY.

a. Catalogue of birds breeding in the immediate vicinity of Sacramento City in June, 1867.

1. Thryomanes Bewicki spilurus. Common?
2. Dendroica æstiva. Abundant.
3. Geothlypis trichas. Abundant.

4. Icteria virens longicauda. Abundant.
5. Hirundo horreorum. Abundant.
6. Progne subis. Abundant.
7. Petrochelidon lunifrons. Abundant.
8. Vireo gilvus Swainsoni. Common.
9. V. pusillus. Common.
10. Collurio Ludovicianus (excubitoroides ?). Common.
11. Carpodacus frontalis. Abundant.
12. Chrysomitris tristis. Abundant.
13. Coturniculus passerinus perpallidus. Common.
14. Chondestes grammaca. Abundant.
15. Melospiza melodia Heermanni. Common.
16. Spizella Breweri. Common.
17. S. socialis. Common.
18. Hedymeles melanocephalus. Common.
19. Guiraca cærulea. Common.
20. Cyanospiza amœna. Common.
21. Pipilo erythrophthalmus Oregonus. Common.
22. Agelaius phœniceus gubernator. Very abundant.
23. A. tricolor. Very abundant.
24. Xanthocephalus icterocephalus. Very abundant.
25. Sturnella neglecta. Common.
26. Icterus Bullocki. Very abundant.
27. Tyrannus verticalis. Abundant.
28. Sayornis nigricans. Common?
29. Contopus Richardsoni. Abundant.
30. Empidonax pusillus. Abundant.
31. Coccyzus Americanus. Rare.
32. Calypte annæ. Common.
33. Trochilus Alexandri. Common.
34. Colaptes auratus Mexicanus. Rare.
35. Otus vulgaris Wilsonianus. Common.
36. Speotyto cunicularia hypugæa. Abundant.
37. Falco sparverius. Abundant.
38. Zenaidura Carolinensis. Abundant.
39. Ægialitis vociferus. Abundant.
40. Ardea herodias. Common.
41. Herodias alba egretta. Rare.
42. Butorides virescens. Abundant.
43. Nyctiardea grisea nævia. Common.
44. Gallinula chloropus galeata. Abundant.
45. Fulica Americana. Abundant.
46. Anas boschas. Abundant.

47. Chaulelasmus streperus. Abundant.
48. Querquedula cyanoptera. Abundant.
49. Aythya ——— sp? Abundant.
50. Larus ——— sp? Abundant.
51. Sterna Forsteri? Abundant.
52. Hydrochelidon fissipes. Very abundant.

b. List of species observed among the oaks of the plains between Sacramento City and the foot-hills of the Sierra Nevada, June and July, 1867.

1. Parus atricapillus occidentalis? Common.
2. Troglodytes aëdon Parkmanni. Common.
3. Eremophila alpestris chrysolæma. Abundant.
4. Pica melanoleuca Nuttalli. Very abundant.
5. Corvus Americanus. Very abundant.
6. Myiarchus crinitus cinerascens. Common.
7. Picus Nuttalli. Common.
8. Melanerpes formicivorus. Abundant.
9. M. torquatus. Abundant.
10. Strix flammea pratincola. Common.
11. Scops asio. Common.
12. Buteo lineatus elegans. Common.
13. Rhinogryphus aura. Rare.

II. SIERRA NEVADA.

a. Species seen among the western foot-hills, July, 1867.

1. Polioptila cærulea? Abundant.
2. Psaltriparus minimus. Abundant.
3. Certhia familiaris fusca. Common.
4. Troglodytes aëdon Parkmanni. Common.
5. Dendroica æstiva. Abundant.
6. Chrysomitris Lawrencii. Common.
7. Pipilo fusca crissalis. Common.
8. Cyanocitta Floridana Californica. Common.
9. Lophortyx Californicus. Common.

b. Species found in the pine forests of the western slope of the Sierra Nevada, at an altitude of 5,000 feet, in July, 1867.

1. Turdus migratorius. Common.
2. T. Swainsoni ustulatus. Abundant.
3. Sialia Mexicana. Common.

4. Cinclus Mexicanus. Common.
5. Myiadestes Townsendi. Common.
6. Dendroica Auduboni. Common.
7. Pyranga Ludoviciana. Common.
8. Junco hyemalis Oregonus. Common.
9. Picicorvus Columbianus. Abundant.
10. Cyanura Stelleri frontalis. Abundant.
11. Picus albolarvatus. Common.
12. Sphyrapicus varius ruber. Rare.
13. Aquila chrysaëtus Canadensis. Common.

c. Species breeding at an altitude of about 7,000 feet on the Sierra Nevada, July, 1867.

1. Zonotrichia leucophrys intermedia. Very abundant.
2. Junco hyemalis Oregonus. Abundant.
3. Sialia Mexicana. Abundant.
4. Turdus migratorius. Abundant.

d. Species breeding on the eastern slope of the Sierra Nevada (July, 1867, and April and May, 1868).

1. Turdus migratorius. Abundant.
2. T. Swainsoni ustulatus. Common?
3. Sialia Mexicana. Common.
4. Cinclus Mexicanus. Common?
5. Regulus calendula. Common?
6. Certhia familiaris fusca. Common?
7. Parus montanus. Abundant.
8. Sitta Carolinensis aculeata. Abundant.
9. S. pusilla pygmæa. Abundant.
10. Helminthophaga celata. Common.
11. Myiodioctes pusillus. Common?
12. Dendroica Auduboni. Common.
13. Geothlypis Macgillivrayi. Abundant.
14. Carpodacus Cassini. Abundant.
15. Chrysomitris pinus. Abundant.
16. Melospiza Lincolni. Common.
17. Junco hyemalis Oregonus. Abundant.
18. Zonotrichia leucophrys intermedia. Abundant.
19. Passerella iliaca megarhynchus. Abundant.
20. Pipilo erythrophthalmus Oregonus. Abundant.
21. Picicorvus Columbianus. Abundant.
22. Cyanura Stelleri frontalis. Abundant.

vations, by E. C. Ward. 1 vol. 8vo. Southern Quarterly Review, 2 numbers. The Athenæum, 10 numbers. Allen's Victoria Regia. 1 vol. folio.

U. S. PATENT OFFICE. Official Gazette for Oct. 13, 1874.

WATERS, J. G. Palestine and the Hebrew People. 1 vol. 16mo. The Books and Characters of the New Testament. 1 vol. 16mo. Lesson on the Old Testament. 1 vol. 12mo. Miscellaneous pamphlets, 40.

WILLSON, E. B. Record of Unitarian Worthies, May, July, Oct., 1874.

WOLCOTT, Mrs. S. B. Catalogue of Harvard College Library. 4 vols. 8vo. The Mass. System of Common Schools. 1 vol. 8vo. 1849. Abstracts of Mass. School Returns, 1839–40, 1840–41, 1845–46. 3 vols. 8vo. Pitkin's Statistics. 1 vol. 8vo. Fisk's Greek Grammar. 1 vol. 12mo. Natural History of the Bible. 1 vol. 12mo. Goodrich's Greek Grammar. 1 vol. 16mo. Hamel's French Grammar. 1 vol. 12mo. Elements of Euclid. 1 vol. 8vo. Pelham's System of Notation. 1 vol. 12mo. Sheridan's Grammar of the English Language. 1 vol. 12mo. Coleman's Discourses. 1 vol. 12mo.

By Exchange.

BOSTON PUBLIC LIBRARY. Bulletin for Oct., 1874.

CROSSE ET FISCHER. Journal de Conchyliologie, 3e Série, Tome xiv, No. 3, 1874.

GEOLOGICAL SURVEY OF CANADA. Report of Progress for 1872–73. 1 vol. 8vo.

INSTITUT HISTORIQUE IN PARIS. L' Investigateur, 40 Année, Juin–Juillet, 1874.

KONGELIGE DANSKE VIDENSKABERNES SELSKAB I KJÖBENHAVN. Oversigt, 1873, No. 3. 1874, No. 1.

NEW YORK STATE LIBRARY. New York Legislative Documents for 1870, '71, '72, '73, '74. Laws. 8 vols. 8vo. Senate Journals. 4 vols. 8vo. Senate Documents. 22 vols. 8vo. Assembly Journals. 8 vols. 8vo. Assembly Documents. 52 vols. 8vo. Manual for the Use of the Legislature of New York, 1871. 1 vol. 12mo.

PEABODY ACADEMY OF SCIENCE. Sixth Annual Report for 1873.

SMITHSONIAN INSTITUTION. Smithsonian Contributions to Knowledge, Vol. xix. 1 vol. 4to. Smithsonian Miscellaneous Collections, Vols. x, xi, xii. 3 vols. 8vo. Smithsonian Reports, 1871, 1872. 2 vols. 8vo.

SOCIÉTÉ D' ACCLIMATATION. Bulletin Mensuel, 3me Série, Tome i, No. 5, Mai, 1874. No. 6, Juin.

SOCIÉTÉ d' ANTHROPOLOGIE IN PARIS. Bulletin, 2e Série, Tome viii, 5e, 6e, Fascicule, 1873. Tome ix, 1er Fascicule, 1874.

VEREIN FÜR ERDKUNDE ZU DRESDEN. x Jahresbericht. 8vo pamph. 1874.

YALE COLLEGE. Catalogue of the Officers and Students in Yale College, 1874–5.

ZEITSCHRIFT FÜR DIE GESAMMTEN NATURWISSENCHAFTEN IN BERLIN. Band ix, Neue Folge, 1874.

PUBLISHERS. American Naturalist. Forest and Stream. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem City Post. Salem Observer.

Hon. JAMES KIMBALL read two petitions, signed some one hundred and fifty years since, to the proper authorities, setting forth the necessity of preventing the construction of dams or other obstructions to the free passage of fish from the sea to the inland ponds, to deposit their spawn during the appropriate season; giving the reasons therefor, and urging the great value of the fisheries to our people. It seems that at this early period in our history there were persons cognizant of the importance of those measures which are now receiving due attention from the national and several of our State governments, commissions having been appointed to take this subject into consideration and to devise means to restock our rivers and streams with food fishes, which in the early settlement furnished an abundant supply. The preservation of fish received the earliest attention of the colonists, as they were one of the great "staples" of Massachusetts, being not only a source of supply for their own wants, but of great profit in their foreign trade; a cargo of fish often procured for them a return cargo of wines, spices, and other luxuries. In the construction of the first mills reservations were made in the grants, "not to stop or hinder the alewives from going up to the great pond." Many of our older citizens may well remember the attention that was given to the removal of all obstructions that would prevent the free passage of the alewives and other fishes to and from the spawning places, by our town authorities, in the appointment of fish committees, whose duties were not only to remove these obstructions, but prevent the taking of fish only on certain days in each week, and also to prescribe the manner that a due proportion may be preserved.

Previous to 1760 but few changes had been effected, and it was not until the beginning of the present century that the old landmarks, once prominent in our local descriptions, began to disappear, and such has been the rapid march of progress, that during the last three-quarters of a century all of them are obliterated.

Improvements required by the progressive tendencies of the age, have contributed in effacing places once famous in our local history. The once beautiful North and South rivers, so important to the first settlers of the town as their principal and most convenient highway, and which afforded ample accommodations to the early commerce of the town, are now reduced to sluggish streams, hardly receiving the purifying influences of the ocean tides, by reason of the obstructions required in the service of trade and manufactures.

To the Justises of the Generall Seshions of the Peace to be holden at Salem for the County of Essex, the last Tuesday of June, 1725.

"The Humble Petition of Thomas Rich Humbly Sheweth. That the North-River in the Town of Salem runs Southwesterly into Severall Ponds, viz. Spring Pond, long Pond & Seder Pond where abundance of Fish passes in the Spring time of the year to spawn. Nevertheless several waires have been made across the Brook, within this few years, which have almost broke their usuall wonted Custom. I have made application to the Selectmen who inform me that it is with your Honours Consideration in that affair. I have this four years last past taken all the care I could in pulling down all the Waires in said Brooks to the severall Ponds once. I requested by a complaint to Justice Sewall & Justice Wolcott for a warrant, hopeing to finde out them that had erected s^{d} waires & I took a Constable with me then we found but one Waire. I have spent four days in the properest time of every last four years abovesaid. Sometimes I have pulled down seven Waires between Mr. Trask' Millpond & the Butts Bridge, this year I was but two days up the Brook but did not find any, but was informed that the fish were stopt in their Comeing down from the ponds, and if your Hon^{rs} in your Wisdom See cause to order that affair, or else their wonted custom will be broke, which will make other fish as Cod & Haddock scarce with us, for *such fish comes in after the above small fish for bait;* and if such inconveniences could be removed, fish might be as plenty as they were formerly, which would be a great benefit to the Town & Country, for which your Petitioner desires your Honors Consideration for his abovesaid trouble, and your Petioner shall ever pray. Thomas Rich."

It seems that the labors of Mr. Rich were in his own opinion of some service, for another petition was presented the next year, which is here presented, verbatim.

"To the Honrball his maiesties Justses of in fear^{e} cort, and generall seshions of the peace to Be holden at Salem for the county of Esex the last Tuesday of June, 1726.

It was considrd By the Honrball cort holden at Salem on the last Tuesday of June 1725, that Thomas Rich shuld tack care, and use all proper meanes that the Law Be observed and fulfilld with respect to the fish being obstructed in thare pasing up the several brukes that leadeth to the several ponds. As spring pond, Long pond and seder pond. Acording to your honors order, I have taken All the cears I coold And I hope to good efect By reason of the plenty of *cod*, & *hadock* that have Byn this year. this was the fifth year that I have tacken cear concerning sd fish passing up sd Brucks four days pr year I have Bin up sd Brucks And wherupon several weares and other in cumbranses one sd Brucks. I am informed that theare is a brook that leadeth out of Ipswidg river to umphreys pond whar Abundans of fish used to pas formerly And if your honors In your wisdom see cas to order that afore it will Be A great Benefit not only to this town But allso to the country. I haue tacken cear five years last past the Select men toock of my rates on year But that is too small Amotes to four days waden up the Bruckes to the small ponds., That if your honors in your wisdom see fit to Alow Sumthng for the managmnt in that mater your petitioner shall for ever pray.

Salem Jun yᵉ 21. 1726.

THOMAS RICH."

"Its Considered by the Court that the petitioner be further Impowered and allowed for the year ensuing to remoue all obstructions in the Brooks as abovsaid."

(Endorsed) "partly granted."

Prof. E. S. MORSE gave some account of certain species of ants which construct receptacles under ground for the storage of their food, describing the manner in which these were made; also the ingenuity and skill displayed, and the division of labor adopted by these ants in the procuring of the food and in the other arrangements in the management of their domestic affairs.

He also described the habits of a family of spiders known as the trap door spiders, who also construct their domiciles under ground, which are tubular in shape and composed of the web filled in with the earth, and other materials that are cemented together by a glutinous matter which they secrete. They have at the entrance a trap door composed of fibres of the web filled with earth, bits of leaves, lichens, etc., so as to be completely disguised. The different species vary somewhat in the style of the construction, though all are made upon the same general principles.

Rev. E. C. **Bolles** reported progress in the formation and arrangement of the collection of specimens illustrating some of the industrial arts, specifying a few of the most interesting additions.

Mr. C. H. **Higbee**, with remarks relative to the articles, presented a series of Heliotypes from J. R. Osgood & Co., Boston, and also the following donations to the collections; from E. C. Mack a fire frame and several kitchen utensils of the olden times; from J. C. Lee specimens of pottery from Torquay; from John Pickering a cast-iron fire place back with the date of 1660, and the initials I. A. P., for John and Alice Pickering, taken from the Pickering house on Broad street, which was built several years previous to the above date by John Pickering, the ancestor of the present owner of the estate. Adjourned.

Regular Meeting, Monday, November 16, 1874.

Meeting this evening at 7.30 o'clock. **President** in the chair. Records read.

The **Secretary** announced the following correspondence :—

From H. B. Dawson, Morrisania, N. Y., Sept. 30; G. L. Goodale, Cambridge, Nov. 9; C. H. Higbee, Nov. 9; J. C. Holmes, Detroit, Mich.. Nov. 12; Stanislas Meunier, Paris, Feb. 21; Robert Ridgway, Washington, D. C., Nov. 7; George H. Woods, Nov. 2; New York Lyceum of Natural History, Nov. 2.

The **Librarian** reported the following additions to the library :—

By Donation.

Flint, Geo. F. Essays on Peace, on War. 1 vol. 12mo. 1827.

Green, Dr. S. A., of Boston, Mass. Sweetser on Consumption. 1 vol. 8vo. Thacher on Hydrophobia. 1 vol. 8vo. Brera's Treatise. 1 vol. 8vo. Sweetser on Digestion and Disorder. 1 vol. 8vo. Halsted's New Method of Curing Dyspepsia. 1 vol. 12mo. Jackson on Fever. 1 vol. 12mo. Constitution of the Mass. Charitable Mechanic Association. 1 vol. 12mo. Miscellaneous pamphlets, 16.

Holmes, J. C., of Detroit, Mich. Third Annual Report of the Secretary of the State Pomological Society of Michigan, 1873. 1 vol. 8vo.

Mack, E. C. The National Era, 1852–1859, 415 numbers.

Meunier, Stanislas, of Paris, France. Cours de Gèologie Comparée, by donor. 1 vol. 8vo. 1874.

Office of the Chief of Engineers. Report of the Board of Commissioners on the Irrigation of the San Joaquin, Tulare and Sacramento Valleys of the State of Cal. Report on the Compressive Strength, Specific Gravity, etc., by Q. A. Gillman.

U. S. Patent Office. Official Gazette, Oct. 20, 27, 1874.

Walton, E. N. Miscellaneous pamphlets, 7.

Waters, H. F. Calcutta Journal, 60 numbers.

By Exchange.

Iowa State Historical Society. The Annals of Iowa, July, 1874.

N. E. Historic-Genealogical Society. Historical and Genealogical Register, Oct.. Dec., 1874.

Phila. Academy of Natural Sciences. Proceedings of the. Pt. ii. Apr.–Sept., 1874.

Society of Natural Sciences of Buffalo. Bulletin of. Vol. ii, No. 3, 1874.

Publishers. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Salem Post. Silliman's Journal. Salem Observer.

The Secretary reported specimens of glass ware, illustrating glass making, from W. Libbey, of the New England Glass Company. Also the manuscript speech of Charles Sumner, delivered in Faneuil Hall, Nov. 5, 1860, after his return from Europe, whither he had gone in search of health. It was received from Mr. Sumner's executors, through the instrumentality of Mr. R. S. Rantoul.

M. McPherson, of Salem, was elected a resident member.

The principal interest of the meeting centred in the Indian skeletons and relics, recently discovered on the land of Mr. Wyman, near the new cemetery in Marblehead. A portion of the bones and the articles found were placed on the table. After the subject had been introduced by the PRESIDENT,

Mr. A. C. GOODELL, Jr., said that from a conversation with Isaac C. Wyman, Esq., the owner of the land where the bodies were found, he was led to visit the locality some two years ago,—in the hope of getting some further light respecting the location of the ancient Fort Darby; but upon viewing the premises he became satisfied that the curious and irregular hollows in the surface of the ground were not the marks of post holes or palisadoes, as had been conjectured, but were, in all probability, the work of Indians. His opinion was confirmed by a tradition in Marblehead that this spot was an Indian burying ground, and he resolved to verify it whenever he could make up a party including Mr. Putnam, the Director of the Museum, whose interest in aboriginal archæology is well known. His illness in the summer of 1873 prevented this excursion; and no opportunity was afforded until late this autumn, when, although Mr. Putnam was absent at the west, a party was hastily got together in order that the investigation might be made before the cold season set in. The party consisted of fourteen persons, including two experienced navvies, and the work was commenced late in the forenoon.

Four holes were sunk without success; but after lunch, one of the party, in digging a fifth hole, came to what he called a decayed root. The digging was instantly stopped until an examination had been made by Mr. Goodell, who drew out a human arm bone, and carefully removing the earth, uncovered a human skull. The other holes were now abandoned, and the entire party set to work, in the most careful manner, to remove the earth, which consisted of a sandy loam, for a considerable space, above and to the north and west of the first skeleton. The result was the discovery of four skeletons, in the condition and position shown in the photographs.* So carefully was the work performed, that not a bone or fragment was displaced. One of the skeletons was removed entire, by forcing a thin board, under it, horizontally, then placing a frame around it, and pouring in plaster of Paris until it was firmly held in place. Much credit is due to Dr. Johnson, and to Rev. Messrs. Atwood and Bolles, and especially to Mr. Cooke, for the skill and care with which the earth immediately about the skeletons was removed. The last named gentleman found, with a fifth skeleton—which is not shown in the photograph, as it was badly broken and decayed—the pieces of pottery, the broken pot or vase, a brass toy bell and two beads of European make, which were exhibited at the meeting.

Mr. WILLIAM P. UPHAM spoke of some references to Indian localities in that neighborhood, found in early deeds preserved among the records at the Court House. He called attention to a passage in Mourt's Relation, narrating the particulars of a voyage of ten men sent out from Plymouth in 1621, with Tisquantum and two other Indian interpreters, to visit the Massachusetts Indians, partly to see the country, partly to make peace with them, and partly to procure their truck. Mourt describes very minutely their passage along the coast for some miles, and then striking across the Bay and coming over to this shore, where they landed, and marched into the country. About four miles from the landing they came to where Nanepashemet, the Indian King, had lived. Not far from thence, in a bottom, they came to a fort built by the deceased King, described thus:—

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*These, prepared by J. W. and J. S. Moulton, may be had at the rooms of the Essex Institute, and at the Naturalists' Agency.

> "There were poles some thirty or forty foot long, stuck in the ground as thick as they could be set one by another, and with these they enclosed a ring some forty or fifty foot over. A trench breast high was digged on each side; one way there was to go into it with a bridge; in the midst of this palisado stood the frame of an house, wherein being dead he lay buried.
>
> About a mile from hence, we came to such another, but seated on the top of an hill; here Nanepashemet was killed none dwelling in it since the time of his death."

Mr. Upham's theory was, or, rather, he hazarded the conjecture, that the old expedition landed, perhaps, at Lynn; that the palisade fort was that which has long been known as the old Indian fort, on the Marblehead and Lynn road, near the junction of the road cut through from Salem a few years ago; and that the hill on which Nanepashemet was killed, was the very hill on which these remains were found. The distances agree very well with those in Mourt's Relation, and the remains of the palisadoed fort still traceable conform to the description of the fort which Mourt's people saw. Whether the bones of either of the bodies were those of Nanepashemet cannot, of course, be determined, but there are reasons for supposing that they may have been. The theory is certainly plausible.

Rev. E. S. Atwood gave some further particulars of the digging operations, and complimented Mr. Cooke for the exceeding care and skill which he exercised in uncovering the remains, expressing the opinion that to his patient labor the Institute was indebted for the perfect state in which the bones were reclaimed and removed.

Mr. **Caleb Cooke** gave an interesting account of his experience in examining Indian graves, both in this county and at the west, and stated that the place where these remains were found was on the top of a hill overlooking Salem harbor, west of the new cemetery, and known as Bessom's pasture. On the surface are irregular depressions marking the site evidently of the wigwams of a considerable village of Naumkeag Indians. In the rear of the brow of the hill, at the other end of the pasture, as he was informed by Mr. J. J. H. Gregory, may be seen a ridge of earth, with a ditch in front, running in a straight line across the pasture. This probably had palisades, and formed the defence of the village. On digging into these depressions, fragments of charcoal, as well as the shells of the *Natica*, *Pecten*, *Mytilus*, *Modiola* and *Mya*, also fragments and entire bones of mammalia and fishes, were met with; in the bottom of some of them a collection of stones was found, showing the evidence of having been exposed to the action of fire; mixed with them were fragments of charcoal and traces of ashes. It was just outside of one of these cellars that the skeletons on the table were found.

No. 1 of the photographs, in reality, consists of portions of two persons, one of them of middle age, the other, judging from the size and thinness of the pieces of the skull, that of a young person. This can be seen near the pelvis of the adult, and may have been a child buried in the arms or lap of its mother. Some of the bones of the legs of the adult are in a reversed position, showing that in this case there was a reburial, or that they were not buried until the body had decayed, and at the burial of the others these were gathered up and placed with them, being laid in as nearly a natural position as possible. This body was placed in the grave with the head pointing in a northeast direction, while the rest were towards the southwest.

No. 2 was found on its back, and had the frontal portion of the skull badly crushed in. On the breast was found a shell of *Pyrula canaliculata*, and under one side of the jaw a small dark mass which on examination proved to have been a pouch made of bear's skin, between the folds of which two bones, of some small mammal, the species of which has not yet been determined, were found. Embedded in this mass, on the outside, were several small copper tubes, one of them showing traces of the cord by which they were fastened to the pouch. Behind the ear were found several more of these tubes, making in all, eight. These relics are evidently the remains of a pouch ornamented by these tubes, that was hanging at the neck when the body was buried. The tubes were from two inches and a half to three inches in length, and from an eighth to a quarter of an inch in diameter; they were made of very thin sheet copper, rolled up, with the edges just lapped, but not fastened.

Nos. 3 and 4 were facing each other, and with these nothing was found.

No. 5, which is not shown in the large photograph, but the position of which is seen in the stereoscopic picture, consisted of but a mere handful of bones, and was a little out of the line to the northeast of the others, its head about on a line with the pelvis of No. 4. Across the top of the head of this was found a stone pestle, six inches and three-quarters long, and at the side of the skeleton numerous pieces of pottery, consisting of a small cup nearly whole, which by careful measurement was found to contain just a gill when perfect, and the fragments of at least two other vessels, a small bell of European make, of a flattened globular form, thirteen-sixteenths of an inch across by eight-sixteenths high, made of two pieces soldered together, two small blue glass beads, and two small polished jasper pebbles. The bell containing nothing to produce a sound, and the fact that only two beads were found, after a careful examination of the soil, lead to the supposition that these beads were once contained in the bell. With all of these bodies was found in varying quantities a dark red substance like ochre, which completely covered some of the bones.

These remains were found at a depth of from twenty to twenty-two inches, and had placed at both ends of each body a large rock upon which they were partly resting. Two of the rocks are shown in the photograph.

Prof. E. S. **Morse** spoke of the importance of these relics in an archæological point of view, and the especial value of the skeleton upon the table, such carefully secured specimens being exceedingly rare. He also made some remarks upon stone and other relics, contending that the similarity of arrowheads wherever found was no indication of a community of origin, but rather of a common necessity which impelled to the fashioning of these implements in the forms which practical experience proved the simplest and most natural. He likewise complimented Mr. Cooke for the care and skill which he had displayed in the preservation of the remains.

Some conversation then took place about the custom of depositing mementos in graves. A suggestion was made that the worthless character of many of the relics found in Indian graves, such as broken pottery, etc., indicated the poverty of the Indians, but it was stated that the negro tribes in Africa, although quite as poor, were in the habit of burying really valuable articles with their dead. Parkman says that the practice of burying treasures with the dead is not peculiar to the North American aborigines, and calls to mind the curious fact mentioned in the "London Times" of Oct. 28, 1865, in describing the funeral rites of Lord Palmerston, viz.:—

> "And as the words, 'Dust to dust, ashes to ashes,' were pronounced, the chief mourner, as a last precious offering to the dead, threw into the grave several diamond and gold rings."

Dr. A. H. Johnson called attention to the bones upon the table, and, by means of a skeleton of the Caucasian race, pointed out the anatomical peculiarities of the Indian bones, illustrating the differences by comparing and contrasting the similar bones in the two races. The bones exhibited were preserved whole, as they lay in the grave. They were not in their natural combinations, but were laid together in a compact bundle, with some regard to symmetry, although not according to their anatomical structure.

Dr. Johnson regarded this collection of bones as a reinterment of one of the tribe or family. It was a practice among the Hurons, well known to the Jesuits, as stated by Parkman, at intervals of ten or twelve years, to collect together their dead and convey them to the common place of sepulture, where the great Feast of the Dead was celebrated with peculiar rites. From all quarters of the Confederated tribes the mourners began their march. The bodies remaining entire were borne on a kind of litter, while the disjointed bones, bundled like fagots, were wrapped in skins, and slung at the shoulders of the relatives. Thus the procession slowly defiled along the forest paths, uttering at intervals, in unison, a dreary, wailing cry, designed to imitate the voices of disembodied souls, winging their way to the land of spirits, and believed to have an effect peculiarly soothing to the conscious relics which each man bore. In conformity with a kindred custom it is probable that this bundle of bones was disinterred from their original grave and reburied in the family or tribal lot.

Dr. Johnson made some further observations relative to the characteristics of the Indians, and expressed the opinion, founded on the statements of the most reliable historians, that the popular impression in regard to the number of aborigines in New England during the early settlements was very much exaggerated.

Rev. E. C. **Bolles** gave a humorous account of the remarks of the bystanders, and the impressions prevalent among them, during the digging operations. He also said that a microscopic examination of the hair and skin found among the relics, revealed the fact that these were the remains of the paw of a bear, which was an ornament frequently worn by the red men. From the character of the relics preserved it was evident that an Indian of no little distinction was among those interred in this grave.

Before adjourning a vote of thanks was passed to Mr. Isaac C. Wyman, the owner of the ground, to Messrs. Roundey, Dolliver and other citizens of Marblehead, for the interest they had manifested and the aid they had rendered in enabling the members of the Institute to conduct the examination which had produced such important results.

SPECIAL MEETING, WEDNESDAY, NOV. 25, 1874.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY stated that JAMES STEELE MACKAYE delivered last evening for the benefit of the Institute his lecture on FRANCOIS DELSARTE. Mr. Mackaye is one of Delsarte's most successful pupils; and this lecture, the recital of his master's life and a fitting tribute to his memory, was listened to with marked attention and pleasure. Delsarte was born in the north of France, Nov. 11, 1811; a descendant of the Delsartos of Italy. His mother was a woman of remarkable refinement and intellectual culture, from whom he inherited his proud spirit, his love of beauty, and his devotion to truth. A very graphic account was given of the bitter struggles of his early days; the success that attended his first appearance on the stage; his subsequent brilliant career as a singer and actor, until an impaired voice compelled him to retire at the height of his fame; and of the subsequent devotion to his studies and the establishment of his "practical school of æsthetics and art" in Paris, which was very celebrated. He died July 20, 1871.

The Secretary also mentioned that Miss ANNA FINKENSTADT, of Newport, had rendered valuable assistance in the Institute course of lectures and concerts at Mechanic Hall on Monday evening, and on his motion it was

Voted, That the thanks of the Institute be presented to Mr. James Steele Mackaye, and Miss Anna Finkenstadt, for their very acceptable contributions thus rendered in the promotion of the objects of the Institute.

Thomas High, of Marblehead, was elected a resident member.

[To be continued.]

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 6. SALEM, MASS., DECEMBER, 1874. NO. 12.

One Dollar a Year in Advance. 10 Cents a Single Copy.

SPECIAL MEETING, WEDNESDAY, NOV. 25, 1874.

[*Continued.*]

BY special request Mr. F. W. PUTNAM exhibited the collection of living fishes and crayfishes which he had brought from the Mammoth Cave, and occupied the evening by giving an account of the specimens and the formation of the cave.

Mr. Putnam stated that his investigations were made while acting as an assistant on the Geological Survey of Kentucky, of which Prof. Shaler was the chief, and therefore he was able to work with great advantage, having been aided by the proprietors of the Mammoth Cave, through their courteous agent, Mr. Miller, and his assistant, Mr. Wilcoxson.

Mr. Putnam first made an allusion to the advanced character of the Kentucky Survey, and the broad and liberal principles upon which it had been based by the legislature of the state, which, by providing for a biological survey in connection with the geological, had thus shown a far more advanced appreciation of the value of science in all its departments, than had many an older state which had simply looked with favor on geological surveys so far as it was thought they would give immediate returns in pecuniary value. He then proceeded to give a general account of the geology of the region, embracing the great cavernous country of which the Mammoth Cave and its vicinity form only a small part. He traced the present drainage of the region, and showed how a large part of the surface of the country was cut up by sink holes, or large circular depressions, in which the rain water accumulated and was then drained off by subterranean streams, to unite with the water of the Green River and its tributaries at a lower level, forming the caves through the immense beds of subcarboniferous limestone. He then explained how the caves, which exist in immense numbers throughout this whole limestone region, had been formed by the action of the carbonic acid in the rain water, and also by the wearing away of the rock by the sand and stones carried along by the streams. He said that no one could examine the caves without being convinced that their formation was wholly due to aqueous action in this way, and that in those chambers where the water was still at its work one could hardly fail to understand the process. In this way the caves have been cut for miles in extent, and to the depth, in some instances, of nearly three hundred feet from the surface. The upper chambers, or early river beds, become dry as the subterranean streams cut their way lower and lower into the limestone, just as the outside rivers cut their way deeper and deeper into the valleys. Many of the caves near the surface have become entirely dry from this deeper drainage, while in others at a little lower level, or in situations where the water from above has percolated through the limestone, the dripping waters have formed the beautiful stalactites by the deposit of the carbonate of lime as each drop of water was freed from its carbonic acid. In such places one beholds the beauties of the formations within the cave, and there are to be seen the innumerable shapes of stalactites, from small tubes to massive pointed forms, and from delicate translucent curtains to immense fluted pendants, while from the water that drops to the floor below arise little hills of pure lime, or the immense pedestals which, in some cases, uniting with the stalactites above, form continuous columns, often fluted and corniced like the most elaborately carved pillars. The upper and dry chambers are left to stand until they shall be worn away by gradual erosion or be destroyed by some great convulsion of nature. The water action that is slowly depositing the lime anew in the form of stalactites and stalagmites is gradually closing the chambers that had previously been formed by its more active operations which are still going on in the passages below. Here the river action is to be seen, and one soon understands the formation of the beds of sand, the pits and the potholes seen in many parts of the caverns.

The present caves are thus unquestionably traced to the action of running water and the chemical action of the carbonic acid which have been going on for thousands and thousands of years. The denudation of the surface of the rock by the same and other causes must not be forgotten, and there is every reason to believe that this denudation, or gradual wearing away of the surface of the limestone, must have been immense. With this consideration before us the suggestion that caverns may once have existed in the upper part of this limestone, made when the rock was in connection with the salt water which formerly extended over this area, may not be considered too bold a one to make, especially as some forms of life are found in these subterranean streams which, at present, seem to indicate a marine origin, and brackish water animals of certain forms once enclosed in the cave, would be very likely to survive under the peculiar conditions in which they were placed, as we know to have been the case under other, but somewhat similar, circumstances. That many, or, with two or three exceptions, nearly all of the thirty or forty species of vertebrates, articulates, mollusks and still lower forms, including a few plants, now discovered in the caves of Kentucky, are of comparatively late introduction, is probable from the fact that they are so closely allied to forms living in the vicinity of the caves, but that the blind fishes, the Chologaster and a few of the lower forms of articulates, as the Lernæan, parasitic on the blind fish, may have been inhabitants of the subterranean streams for a much longer period is worthy of consideration on the following grounds:—

First, the blind fish family has no immediate allies existing in the interior waters,* the only species of the family, in addition to the three found in the Mammoth Cave, being known at present only from the rice ditches of the low coast of South Carolina.

Second, the Lernæan parasite is much more common on marine fishes than on strictly fluviatile species, and is more decidedly a marine than a fresh water form. These facts may therefore be taken as at least indicating the probability of the early origin of some part of the great cave system of the region of the Ohio valley, and while there may be nothing in the present structure of the caves to indicate their having been formed in part while in contact with salt water, the supposed erosion of the limestone and the modification of the early formed chambers by later action should be carefully considered before it can be denied that the caves were not, in some slight part, for a time, supplied with marine life. Until a specimen of Chologaster, or some other member of the family, has been obtained in the external waters of the Ohio valley, it is hardly logical to regard the family to which the blind fishes belong as one originally distributed in the rivers of the Ohio valley, and afterwards becoming exterminated in the rivers and only existing in two such widely different localities as the coast of South Carolina and the subterranean streams of the southwestern states. That marine forms of life are found in our fresh water lakes and rivers is known to be the case. The specimen of a shrimp exhibited was secured in the Green River near one of the outlets of the Mammoth Cave. The fact that in some of the waters of Florida fishes once marine are now confined to the fresh water lakes of comparatively recent formation, and that in the St. John's River, and others of that state, many marine and fresh water species are found associated, are evidence of the change that may take place in the habits of some marine animals, while a recent announcement of the Gobiosoma found in the Ohio River[*] is another instance of a marine fish living in fresh waters.

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*In common with others I have considered the Heteropygii as belonging to the same order with the Cyprinodontes, but I now have, from further information of their structure, doubts as to their close association with that group. This subject will be presented on another occasion.

Living specimens of both species of blind fishes (*Amblyopsis spelæus* and *Typhlichthys subterraneus*) were exhibited, and with them specimens of a fish never before collected in the waters of Mammoth Cave.

This last proves to be the *Chologaster Agassizii* described[†] from a young specimen obtained from a well in

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[*] Putnam, notice of *Gobiosoma molestum* from the Ohio. Am. Nat., viii, Feb., 1874.

[†] See Putnam, Amer. Nat., vi, p. 22, figs., Jan., 1872: Report Peabody Acad. Sci., 1871. Both articles are reproduced in "Life in Mam. Cave," 1872.

Lebanon, Tennessee. This fish, which reaches a length of nearly five inches, is of a delicate brownish tint, and is provided with dark and well developed eyes. Five specimens were secured by setting the seine over night several times, and though every effort was made to capture them by ordinary methods of seining, it proved unsuccessful, so shy and quick of movement is this singular inhabitant of the dark waters of the cave.

Its habits are in marked contrast to those of the blind fishes, for it lives at the bottom of the stream, darting with the utmost rapidity, and swimming rapidly by very quick lateral motions of its whole body, seldom coming near the surface, even in the aquarium, unless disturbed.

The blind fishes on the contrary swim slowly about or remain at rest near the surface of the water, and are very readily seen and easily captured by a careful and quick movement of the scoop net, though if, by means of the peculiar tactile organs with which they are so liberally supplied, they *feel* the least disturbance near them in the water, they move off by a quick dart and then swim slowly about; occasionally they drop to the bottom for a short time, but it is seldom that they are so seen.

An interesting fact respecting the theory of the adaptability of the color of an animal to its surroundings is observable in the Chologaster; they are so near the exact color of the dark sand of the bottom of the river in the cave that it is almost impossible to distinguish them as they lie at rest, and yet this can hardly be supposed in any way to add to their security, for as utter darkness prevails they would be equally safe, in that respect, if they had all the colors of the rainbow displayed on their bodies, and then probably their principal enemy is the large species of *blind* fish.

This Chologaster also gives the most conclusive evidence that light is not necessary for the existence of coloration in animals, for here in total darkness is this most beautifully tinted fish.

From the present knowledge of the fauna of our rivers it can only be assumed, without a fact in favor of such an assumption, that the Chologaster is a later comer into the subterranean streams than its blind and colorless cousins, and it cannot now be maintained with any reason that the supposed peculiar adaptability to surface feeding was the cause of the survival of the blind fishes of the caves, and the want of the structure adapting the fish to surface feeding the reason that other forms did not survive; for we have in Chologaster a fish with just the same structure of mouth as in Amblyopsis and Typhlichthys, provided with an equally large air bladder (if that can be considered as having anything to do with surface habits), and yet living always at the bottom of the water.

Yet that many species enter the cave from the outside waters is proved by the collection of the following species of fishes in the same waters with the blind fishes and the Chologaster:—

Two specimens of *Amiurus catus*, half grown; one specimen of *Uranidea* (sp.?), very large; one specimen each, of full size, of two species of Cyprinoids not yet determined, but, as in the case of the cat-fish and bullhead, of the same species as those collected in the Green River just outside of the cave. All five of these specimens were as highly colored and had their eyes as perfect as their kin in the Green River. They were all in good condition, and when captured were in every way apparently as well off as if in daylight.

A large number of insects, small crustaceans, etc., were obtained in the cave, and a few species of plants of the lower forms were collected. The other living specimens exhibited were a series of crayfish of two species. Of one, the common blind species of the cave, *Cambarus pellucidus*, several specimens were exhibited; most of them were white, but three were of a light drab color. Of the other species, probably the *Cambarus Bartonii*, there was a large specimen of the ordinary color, and another quite small one that was very light colored, while several others now in alcohol were also obtained from the cave in company with the blind species.

In another cave, situated several miles down the Green River from the Mammoth Cave, and on the opposite bank, which was christened "Blind-fish Cave," a number of specimens of the blind Typhlichthys and several blind crayfish were collected. The peculiarity of this cave consists in the fact that from its entrance, under a shelving rock which is considerably above the bed of the Green River, issues a small stream of water which can easily be followed for a short distance, and by crawling along its bed for some few hundreds yards farther. In this cave the blind fishes and blind crayfishes were found not far from its entrance, and, at times, they have been taken by other persons quite out in daylight, yet they are identical in every way with those of the Mammoth and other caves where utter darkness prevails.

Certainly all these facts must be taken into consideration if the attempt is made to account for the origin of cave life, but until the present time many of them have been unknown, and consequently only a very few were used as furnishing proofs of the theories which have been advanced. With these new facts before us it certainly behooves us to be deliberate in drawing our conclusions.

NOTE. Having hinted on this and previous occasions that, from the apparent continuance of marine forms of life in the subterranean regions of the southwest, there may have been caves, of greater or less extent, to which marine life may have had access at a period long past, notwithstanding the present want of geological proof on the spot by which such an idea can be substantiated, the following quotations from the most eminent writers upon limestone formations and upon the structure of caves in other parts of the world, will show that the suggestion is within the limits of the probable.

Professor DANA, in his "Corals and Coral Islands," p. 360, writes as follows: "The elevated coral limestone, although in general a hard and compact rock, abounds in caverns. They may be due in part to open spaces, or regions of loose texture, in or between the strata. But in most cases they are a result of solution and erosion by the fresh waters of the land, *or the waves and currents of the ocean*, subsequent to the elevation. On the island of Mesia, many caverns open outward in the coral limestone cliff* and in some were large stalactites."

In the very important work on caves by Mr. DAWKINS, recently published under the title of "Cave Hunting," the learned author, under the heading of "The Various Ages of Caves," states "It is very probable that caves were formed in calcareous rocks *from the time that they were raised to the level of the sea*, since they abound in Coral Islands." After quoting some facts from Dana's work, he goes on to say:

"Calcareous rocks might therefore be expected to contain fissures and caves of various ages. In the Mendip Hills they have been proved by Mr. Charles Moore to contain fossils of Rhætic age, the characteristic dog-fishes *Acrodus minimus* and *Hybodus reticulatus*, the elegant sculptured Ganoid fish, *Gryrolepis tenuistriatus* and the tiny marsupials, *Microlestes* and its allies. This singular association of terrestrial with marine creatures is due to the fact, that while that area was being slowly depressed beneath the Rhætic and Liassic seas, the remains were mingled together on the coast line, and washed into the crevices and holes in the rock.

The older caves and fissures have very generally been blocked up by accumulations of calc-spar or other minerals, and they are arranged on a plan altogether independent of the existing systems of drainage.

It is a singular fact that no fissures or caves should, with the above exception, contain the remains of animals of a date before the Pleistocene age. There can be but little doubt that they were used as places of shelter in all ages, and they must have entombed the remains of the animals that fell into them, or were swept into them by the streams. Caves there must have been long before, and the Eocene, Palæotheres and Anoplotheres met their death in the open pitfalls, just as the sheep and cattle do at the present time. The Hyænodon of the Miocene had, probably, the same cave-hunting tastes as his descendant, the living hyæna, and the marsupials of the mesozoic age might be expected to be preserved in caves, like the fossil marsupials of Australia.

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*On p. 194 this cliff is described as "a white and solid limestone, seldom presenting any traces of its coral origin."

The chances of preservation of the remains when once cemented into a fine breccia, or sealed down with a crystalline covering of stalagmite, are very nearly the same as those under which the Pleistocene animals have been handed down to us. The only reasonable explanation of the non-discovery of such remains seems to be, that the ancient suites of caves and fissures containing them, and for the most part near the then surface of the rock, *have been completely swept away by denudation, while the present caverns were either not then excavated or inaccessible.*

Such an hypothesis will explain the fact that the non-ossiferous caverns are older than the Pleistocene age, not merely in Europe but in North and South America, Australia and New Zealand. The effect of denudation in rendering the geological record imperfect, may be gathered from the estimate, which Mr. Prestwick has formed, of the amount of rock removed from the crests of the Mendips and the Ardennes, which is in the one case a thickness "of two miles and more," and in the other as much as "three or four miles." Under these conditions we could not expect to find a series of bone caves reaching far back into the remote, geological past, since the caves and their contents would inevitably be destroyed."

See also a quotation from the address by Mr. Prestwick before the Geological Society, on p. 69 of Mr. Dawkins' work, in which the surface denudation by the action of atmospheric water is discussed.

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REGULAR MEETING, MONDAY, DECEMBER 7, 1874.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From N. Cleaveland, Westport, Conn., Dec. 2; S. G. Drake, Boston, Dec. 3; G. L. Goodale, Cambridge, Nov. 25; S. G. Gould, Manchester, N. H., Nov. 19, Dec. 1, Waldo Higginson, Boston, Nov. 27; E. H. Hitchcock, Amherst, Nov. 14; Charles J. Hoadly, Hartford, Conn., Dec. 2; M. F. Jacob, South Hingham, Nov. 27, Dec. 2; Charles Phillips, Philadelphia, Nov. 26; Dec. 2; Willard P. Phillips, Dec. 5; R.

Ridgway, Washington, Nov. 29; M. W. Shepard, Dec. 4; T. N. Snow, Baker City, Oregon, Nov. 18; Basel, Naturforschende Gesellschaft, Aug. 29; Brünn Naturforschende Verein, Sept. 7; München, K. Bayerischen Akademie der Wissenschaften Sept. 15; New York Genealogical and Biographical Society, Nov. 16; New York Historical Society, Dec. 5; Washington, Smithsonian Institute, Aug. 14; Würzburg, Physicalisch-Medicinische, Gesellschaft, Aug. 22.

The Librarian reported the following additions to the library: —

By Donation.

Agassiz, A., of Cambridge, the following works by his father, Louis Agassiz. Catalogus Systematicus Ectyporum Echinodermatum. 4to pamph. Natural History of the Acalephæ of North America. 2 parts, 4to. Monographie des Poissons Fossiles Du Vieux Grés Rouge. 3 parts, text and 40 plates. Monographie d' Echinodermes. 4 Liv. and plates. Mémoire sur les Moules de Mollusques. 4to pamph. Études Critiques sur les Mollusques Fossiles. 4 Liv., 4to pamphlets. On the Origin of Species. 8vo pamph. Contemplations of God in the Kosmos. 8vo pamph. Primitive Diversity of Animals. 8vo pamph. Ichthyological Fauna of the Pacific Slope. 8vo pamph. Classification in the Animal Kingdom. 8vo pamph. Buckland's Geologie und Mineralogie. 2 vols. Untersuchungen über die Gletscher. 1 vol., with plates. Histoire Naturelle des Poissons D' eau Douce de L' Europe Centrale. 1 vol., with plates. Nomenclatoris Zoologici Index Universalis. 1 vol. 12mo. Nomenclator Zoologicus, Continens Nomina Systematica Generum Animalium Tam Viventium Quam Fossilium. 1 vol. 4to. Iconographie des Coquilles Tertiaires. 4to pamph.

Bolles, E. C. Salem Directory for 1872. 1 vol. 8vo. Notes of Livermore. 1 vol. 8vo. Miscellaneous pamphlets, 60.

Brookhouse, Robert. Patent Office Report for 1850–51. 1 vol. 8vo. Hunt's Merchant Magazine, 10 numbers. American Review, 7 numbers. The Cultivator, 100 numbers. N. E. Farmer, 105 numbers. Boston Patriot, 1811, 1813, 1816. The Yankee, 1812.

Miner, A. A., Boston. Catalogue of the Officers and Students of Tufts College, 1874–5, and Triennial. 8vo pamph.

Phillips, W. P. Memorial of Chas. Sumner. 1 vol., small 4to.

Robinson, John. Coin Catalogues, 152. Miscellaneous pamphlets, 23.

U. S. Patent Office. Official Gazette, Nov. 10, 17, 1874.

Woodman, Cyrus, of Cambridge, Mass. Genealogy of the Woodmans of Buxton, Me. By C. Woodman. 1 vol. 8vo.

By Exchange.

Archiv für Anthropologie. Bd vii, Heft I. 1874.

Natural History Society of Montreal. The Canadian Naturalist and Quarterly Journal of Science. Vol. 7. No. 6. Nov., 1874.

Naturforschende Gesellschaft in Basel, Switzerland. Verhandlungen, Sechster Theil, Erstes Heft. 8vo.

Naturforschende Verein in Brünn, Verhandlungen, xi Band. 1872. 8vo.

Naturwissenschaftlichen Gesellschaft "Isis" in Dresden. Sitzungs-Berichte, Jahrg, 1874. Jan-März. 8vo.

New York Genealogical and Biographical Society. Genealogical and Biographical Record, Vol. v, No. iv, Oct., 1874.

Physikalisch-Medicinische Gesellschaft in Wurzburg, Bavaria. Verhandlungen, Neue Folge Bd., vii. 1874. 1 vol. 8vo.

Société Entomologique de Belgique. Annales, Tome xvi, 1873. 1 vol. 8vo.

Société Vaudoise des Sciences Naturelles in Lausanne. Bulletin, Vol. xii. No. 73. 1874.

Publishers. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Observer. Salem Post. Silliman's Journal.

A. Graham Bell, of Salem, was elected a resident member.

Gen. H. K. Oliver gave a brief résumé of a recent valuable donation from the heirs of the late Gen. Benjamin F. Edmands, of Boston, of a large collection of music, both printed and in manuscript, being part of the library of the Boston Academy of Music, an organization that flourished in Boston from 1833 to 1857, and did much to promote the culture of good music in the metropolis. Gen. Oliver spoke in high terms of commendation of several of the early members, specifying more particularly the late Lowell Mason, for many years a leading spirit in musical circles, and Gen. Edmands, a gentleman well known for his zeal and interest in public affairs, more especially in those that relate to the military.

Mr. John Robinson presented a large collection of catalogues and pamphlets on coins and coinage.

Mr. F. W. Putnam presented from Mr. Albert W. Edmands, of Charlestown, an interesting document containing the signatures of the Hon. Anson Burlingame, the ambassador from China, and the members of the Chinese Embassy and suite, when on a visit to this country in 1868.

To the manuscript department Mrs. J. F. Worcester presented the genealogical papers of the late Dr. J. F. Worcester.

Votes of thanks were passed to the several donors.

Mr. John Robinson gave an instructive and interesting account of the processes in the manufacture of glass, in all its varieties, tracing it from its origin to the elaborate and skilful workmanship of the present day, exhibiting specimens and illustrating the methods of mixing and melting by drawings on the blackboard.

Previous to the adjournment, Gen. Oliver alluded to the Transit of Venus, which was to occur on the 8th, and mentioned the plans that have been adopted by several of the governments of Europe and of the United States, in locating a line of observers in different places to note the particular phases of this occurrence; and the importance of these observations in determining facts in astronomical science.

Adjourned.

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Regular Meeting, Monday, December 21, 1874.

Meeting this evening at 7.30 o'clock. The President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence: —

From E. J. Attinelli, New York, Dec. 3, 10; Henry B. Dawson, Morrisania, N. Y., Dec. 10; L. C. Herrick, Woodstock, O., Dec. 1; J. Warren Merrill, Cambridgeport, Dec. 5; M. J. Peabody, Boston, Dec. 4; Charles Phillips, Germantown, Penn., Dec. 9; Robert Ridgway, Washington, Dec. 8; J. Henry Stickney, Baltimore, Md., Dec. 17; Henry White, New Haven, Conn., Dec. 7; W. C. Wood, Wenham, Dec. 12; William H. Yeomans, Columbia, Conn., Dec. 12; Boston Society of Natural History, Dec. 18; Brockton Public Library, Dec. 15; Buffalo Historical Society, Dec. 7; New Hampshire Historical Society, Dec. 14; Rhode Island Historical Society, Dec. 10.

The Librarian reported the following additions to the library: —

By Donation.

Baker, Chas. H., of Annapolis, Md. Annual Register of the U. S. Naval Academy at Annapolis, Md. 1874–5.

Boardman, Sam'l L., of Augusta, Me. The Ornamental and Useful Plants of Maine, by F. L. Scribner. 8vo. pamph. Some Materials towards a History of the Cattle of Maine, by S. L. Boardman. 8vo pamph.

Cogswell, Wm. Miscellaneous pamphlets, 340.

Green, S. A., of Boston. Miscellaneous pamphlets, 14.

Kimball, James. Cape Ann Advertiser, Nov. 13, 20, 28, Dec. 4, 11, 1874.

Lea, Isaac, Philadelphia. Index to Vol. i to xiii, Observations on the Genus Unio. 4to pamph.

Lee, John C. Commercial Bulletin, Nov. 21, 28, Dec. 5, 1874.

Memorial Hall Library, at Andover, Mass. Catalogue of. 1 vol. 12mo.

Thompson, C. O., of Worcester, Mass. Fifth Annual Catalogue of the Worcester Free Institute, 1874–5.

U. S. Patent Office. Official Gazette for Nov. 24, Dec. 1, 1874.

Warner, Oliver. Mass. Public Documents for 1873. 5 vols. 8vo.

Waters, J. Linton. Miscellaneous pamphlets, 14.

Yeomans, W. H., of Columbia, Conn. Report of the Secretary of the Conn., Board of Agriculture. 1873–4. 1 vol. 8vo. Miscellaneous pamphlets, 30.

By Exchange.

Académie Royale des Sciences, Arts et Belles-Lettres, Caen, France. Memoires, 1872. 2 vols. 8vo.

Koniglich Bayerischen Akademie der Wissenschaften in München. Sitzungsberichte der philosophisch-philologischen und historischen Classe. Heft v, vi. Heft. i, ii, iii. 1873. Sitzungsberichte der Mathematisch-physikalischen Classe. Heft. iii. 1873. Heft. i, ii. 1874. Ueber den Einfluss des Freiherrn Justus von Liebig auf die Entwicklung der Physiologie. 4to pamph. 1874. Dr. Justus Freiherrn von Liebig zum Gedächtniss. 4to pamph. 1874. Justus Freiherr von Liebig Als Begründer der Agrikultur-Chemie. 4to pamph. 1874. Gedächtniss Rede auf König Johann von Sachsen. 4to pamph. Ueber Deutschlands Weltstellung. 8vo pamph. 1874.

Maryland Historical Society. The Lords Baltimore: by J. G. Morris, D.D. 8vo pamph. 1874.

Société D' Acclimatation in Paris. Bulletin Mensuel, 3me Série, Tome 1. Nos. 7, 8. Juillet-Aout. 1874.

St. Gallische Gesellschaft, St. Gallen. Bericht. 1872–73, 1 vol. 8vo.

Publishers. American Naturalist. Forest and Stream. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Quaritch's Catalogue. Peabody Press. Salem Observer. Salem Post.

Mr. F. W. **Putnam** noticed some of the very important archæological discoveries of the Hayden exploring expedition, and made interesting mention of the cliff dwellers of the Mancos Cañon of the great Colorado region, describing briefly their habitations, as exhibited by photographs which had been taken by the expedition and from information furnished him by Mr. Ingersol, who was of the party that had made the examination. He then exhibited engravings of somewhat similar dwellings of an ancient race in France, and gave an account of several recent investigations in archæology, both in this country and in Europe.

Mr. **Alfred Osgood** of Newburyport, gave an account of the alleged lead or silver mines in the vicinity of Newburyport. He leaned to the opinion that the accounts were exaggerated; that the ore found was simply float ore, brought thither by glacial action, and that it was doubtful if there were a vein or mine in the place. He, however, thought that a scientific examination ought to be made to ascertain the fact, and suggested that a party should be detailed from the Institute to make a thorough examination.

Mr. **Knowlton**, of Rockport, differed from Mr. Osgood as to the ore being deposited by glacial action, and was inclined to believe it a genuine vein.

Mr. F. W. **Putnam** suggested that the difference of opinion on this subject indicated the importance of a thorough scientific survey of the state, and he thought that the Institute ought to take some action favoring a survey, and present its views to the Legislature, which would soon receive a report from the Board of Education in relation to the subject.

Hon. **George B. Loring** expressed himself in favor of such action, and presented many forcible arguments in furtherance of such a course. He spoke of the practical value of a thorough understanding of the natural resources of a state. The work of agriculture cannot be properly conducted until the condition and quality of the soil are accurately ascertained, and that which is valuable be improved, and that which is useless avoided. In no way can we avoid a wasteful expenditure of money in exploring the mining and mineral wealth of the land, except by such an investigation into the geological formation where that wealth lies, as to reveal its exact condition. To a scientific knowledge of the mineral deposits of one section of our country, and to a scientific application of enquiry to them, do we owe the most successful mining enterprise of our day. In the early days of copper mining at Lake Superior, vast sums of money were wasted through ignorance, and large amounts of property were abandoned from insufficient exploration of their true value; but in our day scientific research guides the miners on to almost fabulous results. For the business prosperity of our state, therefore, he was in favor of the proposed survey, and doubted not that the Legislature would look with favor upon the proposition. And remembering that upon such enterprises, more than upon mere material endeavor, depends the true reputation of a state, in the eyes of all civilized people, he could not believe that Massachusetts would be backward in taking her stand among the most enlightened, as she long had among the most energetic and thriving commonwealths.

After some further discussion, a committee was appointed, consisting of Messrs. F. W. Putnam, A. S. Packard and E. S. Morse, to prepare a memorial to the Legislature, embodying the views of the Institute, and to report the same for action at the next meeting.

Hugh Elder, of Salem, Francis H. Johnson and George W. W. Dove, of Andover, were elected resident members.

BULLETIN

OF THE

ESSEX INSTITUTE,

VOLUME VII.

1875.

SALEM, MASS.
PRINTED AT THE SALEM PRESS.
1876.

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., JANUARY, 1875. No. 1.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JANUARY 4, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From E. P. Boon, New York, Dec. 15; Melvil Dewey, Amherst, Dec. 21, 26; W. I. Fletcher, Hartford, Conn., Dec. 31; Daniel A. Gleason, Boston, Dec. 21; Frank E. Hotchkiss, New Haven, Dec. 27; Alfred M. Mayer, South Orange, N. J., Dec. 18; Charles Phillips, Germantown, Penn., Dec. 30; Lyon, Société d' Agriculture, Juillet 20.

The LIBRARIAN reported the following additions to the library :—

By Donation.

HOTCHKISS, F. E., of New Haven, Conn. Miscellaneous pamphlets, 8.

MERRITT, L. F. Essex County Mercury for Dec. 2, 9, 16, 23, 1874.

STETSON, CHAS., of New York, N. Y. The Erie Railway Tourist. 1 vol. 4to.

WILLSON, E. B. The Christian Freeman and Record of Unitarian Worthies, Dec., 1874. 8vo pamph.

WORCESTER COUNTY MUSICAL ASSOCIATION. Seventh Annual Festival, Oct. 19, 20, 21, 22, 23, 1874. 8vo pamph.

By Exchange.

ACADÉMIE IMPÉRIALE DES SCIENCES, BELLES-LETTRES ET ARTS, LYON. Memoires, Classe des Sciences. Tome xx, 1873–74.

Institut Historique, Paris. L' Investigateur. 40 Année, No. 5, 1874.

Société d' Agriculture, d' Histoire Naturelle et des Arts Utiles, Lyon. Annales, 4e Série. Tomes iv, v, 1871–72. 2 pamphlets.

Société Linneenne, Lyon. Annales. Tome xx. 1873.

Physikalisch-medicinische Gesellschaft, Würzburg. Verhandlungen, Neue Folge, Bd. viii. 1–2 Heft. 1874.

Zoologische Gesellschaft, Frankfurt. Zool. Garten xv, Jahrg. Nos. 1–6, 1874.

Publishers. American Naturalist. Forest and Stream. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Observer. Salem Post. Sailor's Magazine and Seaman's Friend.

Donations to the cabinets were announced from George L. Peabody, of New York City, a rare and valuable Japanese gold obang; from Louis F. Emilio, gold bearing quartz from the Vulture Mine, Arizona, and from Charles T. Jenkins, gold bearing quartz from Ophir Hill, Grass Valley District, Nevada County, Cal.

Mr. F. W. Putnam, of the committee appointed at a previous meeting to prepare a memorial for action of the Institute in relation to a proposed State Topographical, Geological and Biological Survey, reported the same, which was referred to the directors, with authority to act.

ARCHÆOLOGICAL RESEARCHES IN KENTUCKY.

Mr. F. W. Putnam gave an account of some of his recent archæological investigations in Kentucky, made with the assistance furnished by the Peabody Museum of Archæology and Ethnology at Cambridge, while he was engaged as Ichthyologist of the Kentucky State Geological Survey, of which Prof. Shaler is chief.

Confining his remarks to researches made in the caves, and in connection with a peculiar form of burial in circular graves, he first exhibited a number of skulls and other bones found under various conditions, and described the peculiarities of each group, comparing them with those of undoubted Mound Builders, and with those of the New England Indians. While the skulls of the New England Indians are long and narrow, those from the mounds, the circular graves, the stone graves and the caves, were of the short, broad and high type; but in the caves were found two, if not three, classes of burials, and at least two well-marked forms of skulls.

The skulls found in graves which were, as a rule, protected by slabs of stone, were, so far as his researches went, of a form resembling the high, short and broad crania of the typical Mound Builders, while those from caves that contained a large number of skeletons representing bodies that had been thrown into the caves, or perhaps skeletons which had been placed there after the flesh had decayed, were quite characteristic from the very marked depression of the frontal bone and the equally marked concavity on the anterior part of the parietals. The skulls from the "circular grave" were also distinguished from the others by their decided width and shortness, and the more vertical occipital portion.

A series of shin bones was also exhibited, to show the various degrees of flattening which existed, and to prove, as shown by the researches of others, that platycnemism, while most marked in ancient and uncivilized races, could not be taken as a special race character of any great importance.

The examination of a group of mounds near Glasgow was then described, and though no human remains were found in these particular mounds, a most interesting burial place on a hill close by may have had some connection with them. This burial place consisted of a number of circular graves, most of which had been destroyed by the cultivation of the land; but one that had been undisturbed by the plough was carefully opened. This grave was nearly a circle of about four feet in diameter, and had been dug to the depth of about three feet. Upright slabs of limestone about three feet in height, from one to two feet in width and three or four inches in thickness, had then been placed round the hole. The bottom of the grave had been covered with pieces of shale brought from Peter's Creek, about a quarter of a mile distant. The bodies, at least ten in number, had been placed in the grave, evidently arranged in a sitting posture, in a circle, with their backs against the upright slabs. A few pieces of stone found on the surface of the grave may indicate that stones had been placed over it. If any slight earth-mound had been formed over the grave, it had been washed away, as the edges of the upright stones were projecting a few inches above the present surface of the soil. From the fact that only a fragment of pottery was found among the stones on the surface of the grave, and no implements of any kind in the grave, it may be that articles since scattered were placed over the grave. The number of these circular graves that once existed at this spot on the homestead of Gen. Jos. H. Lewis, who had taken Mr. Putnam to the place, brings up many thoughts as to their connection with the group of mounds in the little valley below them, and speculations regarding their peculiar position lead Mr. Putnam to consider them as probably indicating a peculiar mode of burial which may yet be found to be as characteristic of the singular mound-building race, as the burial under mounds is now supposed to be. The fact that all the bodies must have been placed in the grave at the same time, and, as shown by the teeth, that they were those of persons of various ages, from two children who had still the first set of teeth, to a person so old as to have many of the *alveoli* closed up, while the majority were evidently of middle age; and also from the peculiar hole in one of the arm bones, perhaps indicating a blow with some pointed instrument, gives opportunity for speculations which cannot be proved or disproved by these silent relics of a once populous race inhabiting the beautiful country where their bones were laid so long ago that tradition of the more recent Indian tribes gives no clew to them; whence they came or whither they went, all is lost in the great mystery of the past, and only their empty heads and wonderful monuments of industry, with their implements of skill, are left to tell us of their former power. We know not if these burials indicate famine, pestilence, war, or the unholy sacrifice. We can only conjecture that they were not the graves of persons who had died a natural death.

The caves of Kentucky were often used as receptacles for the dead, and many of them contain large numbers of human skeletons; but that they were also used as at least temporary places of habitation is shown by the relics found in Salt Cave, situated near the Mammoth Cave, and belonging to the same proprietors. This cave, which is a rival to the Mammoth in the size of some of its avenues, is difficult of access. A small stream of water flows over its mouth, and runs off, through the loose rocks that have fallen from the roof of the cave, to the passage on the left. After entering the cave, the descent of a steep hill of loose rock to the right leads into a large avenue of several miles in length, the floor of which is covered with jagged rocks which have fallen from above. After climbing over this rough road for some distance, small areas are observed where the rock has not fallen from above, and where the original dirt floor or river bed is seen. In these places there are to be found quite level spots where fires have been kindled, and small piles of stone placed by human hands. Here and there, in favorable places, other small piles of stones are to be seen erected in such a way as to leave a small hole in their centre, and at the bottom of this hole ashes and the stubs of burnt sticks can be seen; while on some of the rocks about were found small bundles of fagots tied with bark and of a convenient size to be taken in one hand and placed in the holes of the rock piles, evidently indicating that these bundles of sticks were brought into the cave for use as lights and firewood. Farther on, in side passages and chambers, other indications of habitation were noticed, and in one small chamber, in which the foot of a white man had never stepped before, were seen on the cave earth the imprints of feet that had been shod with peculiar braided moccasons or sandals. Here were in reality the "footprints on the sands of time." The naked heel and toes, and the braided covering to the sole of the foot, have left impressions as distinct in the tenacious and heavy soil of the cave as if made but a few days previous. In these side chambers, in only a few of which Mr. Putnam's guides had been before, were found a number of cast-off sandals, very finely made of the twisted leaves of the cat-tail flag (*Typha*) braided in a careful and artistic way, identical in the manner of braiding with the straw sandals from China, though of a different shape, and having a raised portion from toe to heel, like the sides of a leather slipper, while all the ends of the braids were brought forward and united on the median line over the toes. About twenty-five of these sandal-like moccasons of various sizes and of several slightly varying designs, but all worn through at toe and heel, were found in the interior chambers of the cave. A piece of cloth more than a foot square and finely and regularly woven, probably from the inner bark of some tree, was also found. This cloth was specially interesting, showing as it did that it had been dyed or colored with black stripes, and also in exhibiting at one corner a place where it had been mended by darning. The other articles found in the cave, which were exhibited at the meeting, with those already mentioned, consisted of bunches of the bark such as was used to make the cloth, and of different degrees of fineness; a number of pieces of bark-twine and rope, several showing knots where pieces had been tied together, some made of twisted strands simply, while others were of a five-strand braid, and of a different and more pliable substance than the coarser-twisted kinds; a small piece of quite a delicate fringe or tassel of neatly braided fibres; a number of reed "torches," generally burnt only at one end; a few small fragments of burnt wood, one showing the rough cutting of a flint axe; several fragments of large gourds; two flint arrow points; a few fragments of shells of *Unio;* a few feathers, probably of the wild turkey, and a portion of a wooden platter or dish. No bones of animals indicating the food of these cave people were found, and though the earth in one of the chambers had been disturbed, and looked, in several places, as if burials had been made, no human bones were discovered. Mr. Putnam intended to make further explorations in this cave, but a severe illness, brought on by exposure and fatigue in the caves, prevented him at that time from carrying out his plan. Enough was discovered, however, to show the importance of a thorough exploration of the caves in this country, both to ascertain the facts relating to their having been used as habitations and as sepulchres, and Mr. Putnam stated that it was encouraging to science to feel that the work begun by the Kentucky Survey, with the assistance given by the Peabody Museum of Archæology at Cambridge, will be continued until more is known relating to the archæology of this large and most important group of American caves.

The discovery, by the saltpetre miners of 1812–15, of bodies buried with care in some of the caves of Kentucky and Tennessee, and the numerous articles which had been found with them, was alluded to by Mr. Putnam, who stated that since his return from Kentucky he had examined the body, and what remained of the very large number of articles found with it, that was so widely known as the "Mammoth Cave Mummy" sixty years ago. This body was, in reality, found in Short Cave, situated about eight miles from the Mammoth Cave, and had been taken to the latter place for the purpose of exhibition. Mr. Putnam had visited the spot from which the body had been taken, and from the location of the grave thought that there was some evidence of the burial having been prior to the fall of the roof rock, which seems to have taken place in many of the caves in this region at a remote time. In some of the caves large stalagmites have formed over these fallen rocks, though in most of the caves where this falling has occurred the passages were dry at the time, and have so continued. He was glad to state that though these priceless relics of a former race had been sadly neglected, and many of the articles found in the grave had been lost and others had gone to decay, still enough remained at the rooms of the American Antiquarian Society at Worcester, to identify the articles found by him in Salt Cave as the same in material, design and structure as those found with the body in Short Cave, so that he had thus secured undoubted osteological characters of the race to go with the articles of clothing, etc., of the people who had made use of Salt Cave as a habitation, and he thought, from all that had been found, we could, with little doubt, class this people among the more highly civilized and agricultural of the prehistoric races of America, and it was also very probable that Salt Cave had only been used as a temporary retreat. A number of fragments of the twine, cloth, etc., found with the body now in the collection of the Antiquarian Society, were exhibited side by side with similar ones from Salt Cave, and were seen to be of the same character. All the specimens of cloth, etc., from Salt Cave were extremely brittle, and had only been preserved by saturating in gelatine and afterwards mounting between glass, while those from the grave in Short Cave were, from some cause, still in their natural pliable condition. In this connection it is also interesting to record the fact that the wooden bowl from the Mammoth Cave, in the collection of the American Antiquarian Society at Worcester, is the one which tradition gives as having been found in the passage of the Mammoth Cave, still known, from this circumstance, as the wooden-bowl chamber, and it is probable that the fragment of the wooden vessel found in Salt Cave was part of a similar article.

Capt. WM. H. DALL, of the United States Coast Survey, alluded to the mode of burial of the Aleutian Islanders, and of the preparation of the bodies after death, by which they were partially mummified. He also spoke of the beautiful braided grass-work of the Aleuts, and stated that the Eskimos made a kind of a stocking of braided grass, which they wore inside of their boots as an extra protection to the feet.

LISTS OF BIRDS OBSERVED AT VARIOUS LOCALITIES CONTIGUOUS TO THE CENTRAL PACIFIC RAILROAD, FROM SACRAMENTO CITY, CALIFORNIA, TO SALT LAKE CITY, UTAH.

BY ROBERT RIDGWAY.

Continued from page 174, Vol. vi.

The following species were found breeding on the adjacent mountains eastward of the Sierra Nevada, in July and August, 1867, and April and May, 1868:—

1. Sialia arctica. Abundant.
2. Lophophanes inornatus. Common (locally).
3. Psaltriparus minimus plumbeus. Abundant (locally).
4. Salpinctes obsoletus. Very abundant.
5. Catherpes Mexicanus conspersus. Rare.
6. Myiadestes Townsendi. Common?
7. Pipilo erythrophthalmus Oregonus. Abundant.
8. P. chlorurus. Common.
9. Scolecophagus cyanocephalus. Very abundant.
10. Corvus corax carnivorus. Abundant.
11. Gymnokitta cyanocephala. Abundant.
12. Empidonax obscurus. Common.
13. Selasphorus rufus. Abundant.
14. Trochilus Alexandri. Abundant.
15. Archibuteo lagopus Sanctijohannis. Common.
16. Aquila chrysaëtus Canadensis. Common.
17. Falco saker polyagrus. Common.
18. F. columbarius. Rare?
19. Nisus Cooperi. Rare.
20. Oreortyx pictus plumifera. Rare.

III. WESTERN NEVADA, ETC.

a. Eagle Valley (November 29, 1867).

In Eagle Valley but one locality was visited, viz., the town of Genoa and vicinity, including marshes in the valley and pine forests on the Sierra Nevada. In the former the usual species of water fowl were found, and also *Circus hudsonius* and *Falco polyagrus*. In the pines the species were the same as those near Carson City, but the mountain quail (*Oreortyx pictus plumifera*) was more common.

b. Carson Valley (Nov. 27-29, 1867; Jan 13-April 29, 1868).

The species breeding in the vicinity of Carson City were divided into three groups — one inhabiting the pine woods of the Sierra Nevada (Washoe Spur), one the cedar and piñon groves of the ranges to the eastward, and the other the sage brush wastes and other localities in the valleys. The first two sets are included in lists under the head of II, d; the other was composed of the following species, inhabiting chiefly the sage brush and meadows:—

(Sage-brush plains.)

1. Oreoscoptes montanus. Very abundant.
2. Eremophila alpestris chrysolæma. Common.
3. Collurio Ludovicianus excubitoroides. Common.
4. Poospiza Belli Nevadensis. Very abundant.
5. P. bilineata. Rare.
6. Spizella Breweri. Abundant.
7. Chondestes grammaca. Common.
8. Antrostomus Nuttalli. Common.
9. Chordeiles popetue Henryi. Common.
10. Speotyto cunicularia hypogæa. Rare.
11. Zenaidura Carolinensis. Very abundant.
12. Centrocercus urophasianus. Rare.

(River valley.)

1. Geothlypis trichas. Common.
2. Icteria virens longicauda. Common.
3. Pyranga Ludoviciana. Common.
4. Vireo gilvus Swainsoni. Abundant.
5. Pooecetes gramineus confinis. Rare.
6. Passerculus savanna alaudinus. Common.
7. Coturniculus passerinus perpallidus. Common.
8. Hedymeles melanocephalus. Common.
9. Cyanospiza amœna. Common.
10. Carpodacus frontalis. Common.
11. Melospiza melodia Heermanni. Common.
12. Pipilo erythrophthalmus Oregonus. Common.
13. Agelaius phœniceus. Abundant.
14. Xanthocephalus icterocephalus. Abundant.
15. Sturnella neglecta. Abundant.
16. Icterus Bullocki. Abundant.
17. Pica melanoleuca Hudsonica. Very abundant.
18. Tyrannus verticalis. Very abundant.
19. Contopus Richardsoni. Abundant.
20. Empidonax pusillus. Abundant.
21. Otus vulgaris Wilsonianus. Common.
22. Bubo Virginianus arcticus. Rare.
23. Falco sparverius. Very abundant.
24. Ægialitis vociferus. Abundant.

25. Tringoides macularius. Abundant.
26. Herodias alba egretta. Rare.
27. Nyctiardea grisea nævia. Rare.
28. Botaurus minor. Common.
29. Grus Canadensis. Common.
30. Porzana Carolina. Common.
31. Fulica Americana. Common.
32. Anas boschas. Common.
33. Querquedula cyanoptera. Common.

(*In suitable localities.*)

1. Progne subis. Common.
2. Tachycineta bicolor. Abundant.
3. Cotyle riparia. Common.
4. Stelgidopteryx serripennis. Abundant.
5. Hirundo horreorum. Common.
6. Petrochelidon lunifrons. Very abundant.
7. Sayornis Sayus. Common.
8. Ceryle alcyon. Common.

Farther down the river, where the cottonwood trees increase in number, the fauna was augmented by *Nephœcetes niger* (extremely abundant), *Buteo Swainsoni* and *B. borealis calurus*, thus becoming essentially like that of the lower Truckee Valley (see table f.).

CATALOGUE OF WINTER RESIDENTS IN THE VICINITY OF CARSON CITY.

No.	Species.	Numbers.	Localities frequented.
1	Turdus migratorius	Common	Willows.
2	Cinclus Mexicanus	Rare	Streams.
3	Sialia Mexicana	Abundant	Fields and pines.
4	S arctica	Abundant	Cedars and open fields.
5	Regulus caleudula	Abundant	Willows.
6	Lophophanes inornatus	Abundant	Pines and cedars.
7	Parus montanus	Abundant	Pines only.
8	Psaltriparus minimus plumbeus	Sometimes met with	Brushy ravines.
9	Sitta Carolinensis aculeata	Abundant	Pines only.
10	S. pygmæa	Abundant	Pines only.
11	Certhia Americana	Not common	All wooded places.
12	Catherpes Mexicanus conspersus	Common	Secluded rocky places.
13	Telmatodytes palustris paludicola	Common	Tules and rushes.
14	Troglôdytes aëdon Parkmanni	Not common	Brushwood and willows.
15	T. hyemalis Pacificus	Rare	River bottoms.
16	Anthus Ludovicianus	Extremely abundant.	All wet open portions.
17	Dendroica Auduboni	Common	Willows and cotton woods.
18	Collurio borealis	Not common	Open situations.

No.	Species.	Numbers.	Localities frequented.
19	C. Ludovicianus excubitoroides	Abundant	Open situations.
20	PlectrophanesLapponicus	Rare	Mixed with flocks of *Eremophila.*
21	Zonotrichia leucophrys intermedia	Abundant	Willows and brushwood.
22	Junco hyemalis Oregonus	Abundant	All wooded places.
23	Poospiza Belli Nevadensis	Abundant	Sage-brush only.
24	Spizella monticola	Common	Sage-brush and brushwood.
25	Melospiza melodia Heermanni	Abundant	Willows and tules.
26	Passerella schistacea	Rare	Willows along streams.
27	Pipilo erythrophthalmus Oregonus	Abundant	All bushy places.
28	Eremophila alpestris chrysolæma	Exceedingly abund't.	All open portions.
29	Agelaius phœniceus	Abundant	Vicinity of corrals.
30	Xanthocephalus icterocephalus	Not common	Vicinity of corrals.
31	Sturnella neglecta	Abundant	Sage-brush and fields.
32	Scolecophagus cyanocephalus	Extremely abundant	Vicinity of corrals.
33	Pica melanoleuca Hudsonica	Abundant	Everywhere, particularly around slaughter-houses.
34	Cyanura Stelleri frontalis	Abundant	Pines and brushy ravines.
35	Gymnokitta cyanocephala	Abundant	Piñon and cedars only.
36	Picicorvus Columbianus	Abundant	Pines only.
37	Corvus corax carnivorus	Abundant	About slaughter-houses.
38	Picus villosus Harrisi	Common	All wooded places.
39	P. albolarvatus	Rather common	Pines only.
40	Picoides arcticus	Rare	Pines only.
41	Sphyrapicus thyroideus	Common	Pines only.
42	Colaptes auratus Mexicanus	Abundant	Everywhere.
43	Speotyto cunicularia hypogæa	Rare	Sage-brush and fields.
44	Bubo Virginianus arcticus	Rare	Woods.
45	Otus vulgaris Wilsonianus	Common	Willows.
46	Falco saker polyagrus	Common	Open situations.
47	F. columbarius	Rare	Open situations.
48	F. sparverius	Very abundant	Woods chiefly.
49	Circus cyaneus Hudsonius	Common	Marshes and streams.
50	Nisus Cooperi	Rare	General.
51	Aquila chrysaëtos Canadensis	Common	Mountains.
52	Archibuteo lagopus Sanctijohannis	Common	General.
53	Buteo borealis calurus	Common	Woods chiefly.
54	B. Swainsoni	Common	River valley.
55	Oreortyx pictus plumifera	Rare	Mountains.
56	Ægialitis vociferus	Rare	Streams.
57	Botaurus minor	Rare	Marshes and streams.
58	Branta Canadensis	Abundant	Lakes, etc.
59	B. Hutchinsi	Abundant	Lakes, etc.
60	Anas boschas	Abundant	Lakes, etc.
61	Aythya Americana	Abundant	Lakes, etc.
62	A. vallisneria	Abundant	Lakes, etc.
63	Bucephala Americana	Abundant	Lakes, etc.
64	B. albeola	Abundant	Lakes, etc.
65	Fulix marila	Abundant	Lakes, etc.
66	F. collaris	Abundant	Lakes, etc.
67	Erismatura rubida	Abundant	Lakes, etc.
68	Podiceps occidentalis	Common	Lakes, etc.
69	P. auritus Californicus	Common	Lakes, etc.
70	Podilymbus podiceps	Common	Lakes, etc.

d. Washoe Valley (May 9, 1868).

In passing by the shore of Washoe Lake, large numbers of the following species were seen:—*Fulica Americana*, *Sterna regia*, *S. Forsteri* and *Hydrochelidon fissipes.* Among the open pine groves and scattered pine trees which reached from the slope of the lofty and heavily timbered Washoe Mountains out some distance upon the valley, the characteristic birds were *Cyanura Stelleri frontalis*, *Melanerpes torquatus*, *Sialia Mexicana* and *Turdus migratorius;* penetrating a short distance into the forest, *Picus albolarvatus* and *Passerella iliaca megarhynchus* were found to be common.

e. Truckee Meadows (July 16-20; November 5-7 and 11-20, 1867).

The characteristic birds of the summer fauna were chiefly numerous water-fowl, especially *Querquedula cyanoptera*, *Chaulelasmus streperus*, *Anas boschas*, *Fulica Americana*, *Recurvirostra Americana*, and *Himantopus nigricollis*, all found in the greatest abundance. In the fall the following species not met with in the summer, were observed:—*Anthus Ludovicianus* (excessively abundant), *Corvus Americanus* (common), *Archibuteo lagopus Sanctijohannis* (abundant). A yellow-winged *Colaptes*, probably *C. chrysoides*, was seen.

f. Catalogue of the Birds breeding in the Truckee Valley (May and June, 1868 and July and August, 1867.)

1. Oreoscoptes montanus. Common.
2. Troglodytes aëdon Parkmanni. Abundant.
3. Telmatodytes palustris paludicola. Abundant.
4. Dendroica æstiva. Abundant.
5. Geothlypis trichas. Common.
6. Icteria virens longicauda. Common.
7. Pyranga Ludoviciana. Common.
8. Hirundo horreorum. Common.
9. Tachycineta bicolor. Very abundant.
10. Progne subis. Rare.
11. Stelgidopteryx serripennis. Abundant.
12. Cotyle riparia. Abundant.
13. Petrochelidon lunifrons. Abundant.
14. Vireo gilvus Swainsoni. Abundant.
15. Collurio Ludovicianus excubitoroides. Common.
16. Carpodacus frontalis. Common.
17. Chrysomitris tristis. Rare.
18. Passerculus savanna alaudinus. Common.
19. Pooecetes gramineus confinis. Rare.

20. Melospiza melodia Heermanni. Abundant.
21. Poospiza bilineata. Common.
22. P. Belli Nevadensis. Abundant.
23. Spizella socialis Arizonæ. Abundant.
24. S. Breweri. Abundant.
25. Chondestes grammaca. Abundant.
26. Hedymeles melanocephalus. Common.
27. Cyanospiza amœna. Rare.
28. Pipilo erythrophthalmus Oregonus. Common.
29. P. chlorura. Rare.
30. Molothrus pecoris. Rare.
31. Agelaius phœniceus. Abundant.
32. Xanthocephalus icterocephalus. Abundant.
33. Sturnella neglecta. Abundant.
34. Icterus Bullocki. Abundant.
35. Pica melanoleuca Hudsonica. Abundant.
36. Tyrannus Carolinensis. Common.
37. T. verticalis. Abundant.
38. Myiarchus crinitus cinerascens. Rare.
39. Sayornis Sayus. Rare.
40. Contopus Richardsoni. Abundant.
41. Empidonax pusillus. Abundant.
42. Chordeiles popetue Henryi. Common.
43. Nephœcetes niger borealis. Rare.
44. Chætura Vauxi. Common.
45. Trochilus Alexandri. Abundant.
46. Ceryle alcyon. Common.
47. Coccyzus Americanus. Rare.
48. Picus villosus Harrisi. Common.
49. Colaptes auratus Mexicanus. Abundant.
50. Bubo Virginianus arcticus. Common.
51. Otus vulgaris Wilsonianus. Common.
52. Circus cyaneus Hudsonius. Abundant.
53. Falco sparverius. Very abundant.
54. Buteo borealis calurus. Common.
55. B. Swainsoni. Common.
56. Pandion haliætus Carolinensis. Rare.
57. Rhinogryphus aura. Abundant.
58. Zenaidura Carolinensis. Very abundant.
59. Ægialitis vociferus. Common.
60. Recurvirostra Americana. Common.
61. Himantopus nigricollis. Common.
62. Rhyacophilus glareola solitarius. Rare.
63. Tringoides macularius. Common.

64. Numenius longirostris. Rare.
65. Herodias alba egretta. Rare.
66. Nyctiardea grisea nævia. Rare.
67. Botaurus minor. Common.
68. Ardetta exilis. Rare.
69. Grus Canadensis. Common.
70. Rallus Virginianus. Common.
71. Porzana Carolina. Common.
72. Fulica Americana. Abundant.
73. Branta Canadensis. Common.
74. Anas boschas. Very abundant.
75. Dafila acuta. Common?
76. Chaulelasmus streperus. Very abundant.
77. Mareca Americana. Common.
78. Querquedula cyanoptera. Abundant.
79. Q. discors. Rare?
80. Spatula clypeata. Common?
81. Aix sponsa. Rare?
82. Erismatura rubida.
83. Graculus dilophus.
84. Sterna regia.
85. S. Forsteri.
86. Podiceps occidentalis.
87. P. auritus Californicus.
88. Podilymbus podiceps.

g. Species breeding on adjacent plateaux.

1. Eremophila alpestris chrysolæma. Common.
2. Antrostomus Nuttalli. Common.
3. Speotyto cunicularia hypogæa. Rare.
4. Centrocercus urophasianus. Common.

h. Species breeding on the rocky islands in Pyramid Lake.

1. Tachycineta thalassina. Abundant.
2. Falco communis anatum. One pair.
3. Haliaëtus leucocephalus. One pair.
4. Ardea herodias. Abundant.
5. Pelecanus erythrorhynchus. Excessively abundant.
6. Larus Californicus. Excessively abundant.

The following notes relate further to the bird-fauna of Western Nevada:

List of species observed in the Lower Truckee Valley in May and not at other times.

1. Nephœcetes niger borealis. Rare.
2. Chætura Vauxi. Common.
3. Trochilus Alexandri. Common.
4. Turdus Swainsoni ustulatus. Rare.
5. Carpodacus frontalis. Abundant.
6. Molothrus pecoris. Rare.

Species seen only in July and August.

1. Selasphorus rufus. Very abundant.
2. Tyrannus Carolinensis. Several pairs.
3. Myiodioctes pusillus. Rare.

Species seen only in December.

1. Regulus calendula. Very abundant.
2. Anthus Ludovicianus. Very abundant.
3. Dendroica Auduboni. Very abundant.
4. Sialia arctica. Rare.
5. Troglodytes parvulus hyemalis. Rare.
6. Certhia familiaris fusca. Rare.
7. Zonotrichia leucophrys intermedia. Very abundant.
8. Junco hyemalis Oregonus. Very abundant.
9. Spizella monticola. Common.

SPRING ARRIVAL OF BIRDS IN WESTERN NEVADA IN 1868.

a. Carson City.

1.	Sayornis Sayus	March	12.
2.	Salpinctes obsoletus	"	20.
3.	Oreoscoptes montanus	"	24.
4.	Tachycineta bicolor	"	25.
5.	Poocætes gramineus confinis	April	1.
6.	Rhinogryphus aura	"	2.
7.	Hirundo horreorum	"	8.
8.	Spizella Breweri	"	9.
9.	Stelgidopteryx serripennis	"	15.
10.	Empidonax obscurus	"	21.
11.	Tyrannus verticalis	"	22.
12.	Progne subis	"	23.
13.	Zenaidura Carolinensis	"	23.
14.	Pipilo chlorurus	"	25.

15. Melanerpes torquatus	April	25.
16. Spizella socialis Arizonæ	"	29.
17. Cyanocitta Floridana Californica . .	"	29.
18. Melospiza Lincolni	"	29.
19. Tringoides macularius	"	29.
20. Vireosylvia gilva Swainsoni . . .	"	29.
21. Chondestes grammaca	May	3.
22. Myiadestes Townsendii	"	4.
23. Petrochelidon lunifrons	"	4.

b. Washoe Valley.

24. Fulica Americana	May	9.
25. Sterna regia	"	9.
26. Hydrochelidon fissipes	"	9.

(These were all abundant at this date.)

c. Steamboat Valley.

27. Dendroica æstiva	May	9.
28. Cyanospiza amœna	"	9.
29. Icterus Bullocki	"	9.

d. Truckee Meadows.

30. Geothlypis trichas	May	10.
31. Icteria virens longicauda	"	10.
32. Pyranga Ludoviciana	"	10.

e. Truckee Reservation, near Pyramid Lake.

33. Carpodacus frontalis	May	13.
34. Poospiza bilineata	"	13.
35. Rhyacophilus glareola solitarius . .	"	13.
36. Hedymeles melanocephalus	"	14.

IV. EASTERN NEVADA, ETC.

a. Birds found in the West Humboldt Mountains, Sept. 3–Oct. 23, 1867.

1. Turdus migratorius. Common.
2. Sialia arctica. Common.
3. Cinclus Mexicanus. Common.

4. Psaltriparus minimus plumbeus. Abundant.
5. Salpinctes obsoletus. Common.
6. Troglodytes aëdon Parkmanni. Common.
7. Anthus Ludovicianus. Common.
8. Eremophila alpestris chrysolæma. Common.
9. Helminthophaga celata. Common.
10. H. celata lutescens. Rare.
11. Dendroica æstiva. Common.
12. D. Auduboni. Common.
13. Geothlypis Macgillivrayi. Common.
14. Icteria virens longicauda. Common.
15. Myiodioctes pusillus. Abundant.
16. Vireosylvia gilva Swainsoni. Abundant.
17. Lanivireo solitaria Cassini. Rare.
18. L. solitarius. Very rare.
19. Collurio Ludovicianus excubitoroides. Rather common.
20. Carpodacus frontalis. Rare.
21. Passerculus savanna alaudinus. Common.
22. Melospiza melodia fallax. Common.
23. M. melodia guttata. One specimen.
24. Zonotrichia leucophrys intermedia. Abundant.
25. Z. coronata. One specimen.
26. Poospiza Belli Nevadensis. Rare.
27. P. bilineata. Rare.
28. Junco hyemalis Oregonus. Common.
29. Hedymeles melanocephalus. Common.
30. Pipilo erythrophthalmus Oregonus. Common.
31. P. chlorura. Common.
32. Agelaius phœniceus. Common.
33. Sturnella neglecta. Common.
34. Icterus Bullocki. Rare.
35. Scolecophagus cyanocephalus. Very abundant.
36. Corvus corax carnivorus. Common.
37. Pica melanoleuca Hudsonica. Abundant.
38. Cyanocitta Floridana Woodhousii. Common.
39. Sayornis Sayus. Common.
40. Empidonax obscurus. Rare.
41. Colaptes auratus Mexicanus. Common.
42. C. chrysoides? One specimen.
43. Nisus Cooperi. Rare.
44. Ectopistes migratoria. One specimen.
45. Zenaidura Carolinensis. Abundant.
46. Centrocercus urophasianus. Common.
47. Regulus calendula. Common.

b. Species breeding on Toyabe Mountains, at an altitude of about 6,500–7,000 feet (Austin, July 2–4, 1868).

1. Oreoscoptes montanus. Rare.
2. Turdus migratorius. Common.
3. Pipilo chlorurus. Very abundant.
4. Empidonax obscurus. Abundant.
5. Eremophila alpestris (leucolæma?) Common.
6. Spizella Breweri. Abundant.
7. Cyanospiza amœna. Common.
8. Poocætes gramineus confinis. Common.
9. Panyptila saxatilis. Rare.

c. Eastern slope of Ruby Mountains (July 13–Sept. 1).

1. Turdus migratorius. Common.
2. Oreoscoptes montanus. Rare.
3. Sialia arctica. Abundant.
4. Parus montanus. Rare.
[1]5. Psaltriparus minimus plumbeus. Rare.
6. Salpinctes obsoletus. Common
7. Catherpes Mexicanus conspersus. Rare.
8. Troglodytes aëdon Parkmanni. Common.
9. Eremophila alpestris (chrysolæma?) Common.
10. Helminthophaga Virginiæ. Common.
11. Dendroica æstiva. Abundant.
12. D. nigrescens. Common.
13. Geothlypis Macgillivrayi. Common.
14. Icteria virens longicauda. Rare.
15. Myiodioctes pusillus. Rare.
16. Pyranga Ludoviciana. Common.
17. Tachycineta thalassina. Abundant.
18. Hirundo horreorum. Common.
19. Petrochelidon lunifrons. Very abundant.
20. Vireo solitarius plumbeus. Common.
21. Vireosylvia gilva Swainsoni. Abundant.
22. Collurio Ludovicianus excubitoroides. Common.
23. Carpodacus Cassini. Very abundant.
24. Loxia leucoptera. One specimen.
25. Chrysomitris pinus. Very abundant.
26. C. tristis. Rare.
27. Poocætes gramineus confinis. Common.
28. Melospiza melodia fallax. Common.

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[1] What was taken to be *P. melanotis*, a North Mexican species, was seen here.

29. Poospiza Belli Nevadensis. Common.
30. Spizella Breweri. Common.
31. S. socialis Arizonæ. Very abundant.
32. Chondestes grammaca. Common.
33. Hedymeles melanocephalus. Common.
34. Cyanospiza amœna. Common.
35. Pipilo erythrophthalmus megalonyx. Rare.
36. P. chlorura. Rare.
37. Icterus Bullocki. Common.
38. Scolecophagus cyanocephalus. Rare.
39. Corvus corax carnivorus. Common.
40. Picicorvus Columbianus. Common.
41. Gymnokitta cyanocephala. Common.
42. Cyanocitta Floridana Woodhousii. Common.
43. Tyrannus verticalis. Abundant.
44. Myiarchus crinitus cinerascens. Common.
45. Sayornis Sayus. Common.
46. Contopus borealis. Rare.
47. C. Richardsoni. Abundant.
48. Empidonax obscurus. Abundant.
49. E. pusillus. Abundant.
50. Antrostomus Nuttalli. Common.
51. Chordeiles popetue Henryi. Abundant.
52. Panyptila saxatilis. Excessively abundant.
53. Stellula calliope. Common.
54. Selasphorus platycercus. Excessively abundant.
55. Trochilus Alexandri. Common.
56. Picus villosus Harrisi. Rare.
57. Colaptes auratus Mexicanus. Common.
58. Falco saker polyagrus. Common.
59. F. sparverius. Abundant.
60. Aquila chrysaëtus Canadensis. Common.
61. Buteo borealis calurus. Common.
62. B. Swainsoni. Common.
63. Nisus Cooperi. Rare.
64. Zenaidura Carolinensis. Abundant.
65. Centrocercus urophasianus. Common.

d. Species found on the eastern slope of the East Humboldt Mountains (September 4–10, 1868.)

1. Troglodytes aëdon Parkmanni. Common.
2. *Helminthophaga ruficapilla.*[2] One specimen.

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[2] The species in italic were met with no farther west than this locality.

3. H. celata. Very abundant.
4. H. celata lutescens.[a] Very rare.
5. *Dendroica Townsendi.* Rare.
6. *D. occidentalis.* Rare.
7. Geothlypis trichas. Common.
8. G. Macgillivrayi. Common.
9. *Turdus Swainsoni.* Common.
10. Chrysomitris pinus. Abundant.
11. Poocaëtes gramineus confinis. Abundant.
12. Contopus Richardsoni. Common.
13. Empidonax obscurus. Abundant.
14. *E. Hammondi.* Common.
15. Selasphorus rufus.[a] One pair.
16. S. platycercus. Abundant.
17. Melanerpes torquatus. Common.
18. Canace obscura. Common.

e. Species observed in the Upper Humboldt Valley (September 10–19).

1. *Turdus Pallasi nanus.* One specimen.
2. T. Swainsoni. Common.
3. Helminthophaga celata. Common.
4. *Sitta Canadensis.* Rare.
5. *Ampelis cedrorum.* Rare.
6. Vireo solitarius. Rare.
7. Passerculus savanna alaudinus. Common.
8. Zonotrichia leucophrys intermedia. Abundant.
9. Melospiza melodia fallax. Abundant.
10. M. Lincolni. Common.
11. Passerella iliaca schistacea. Common.
12. Junco hyemalis Oregonus. Abundant.
13. Pipilo chlorura. Common.
14. Empidonax obscurus. Common.
15. Antrostomus Nuttalli. Common.
16. Picus villosus Harrisi. Common.
17. *P. pubescens Gairdneri.* Rare.
18. Sphyrapicus varius nuchalis. Rare.
19. Melanerpes torquatus. Rare.
20. *Nisus fuscus.* Common.
21. *Pedioecetes phasianellus Columbianus.* Abundant.

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[a] These species were seen no farther east than this locality.

f. Species found in the Lower Humboldt Valley (at the "Sink," August 20–27, 1867).

1. Passerculus savanna alaudinus. Abundant.
2. Eremophila alpestris chrysolæma. Abundant.
3. Corvus corax carnivorus. Abundant.
4. Recurvirostra Americana. Abundant.
5. Himantopus nigricollis. Abundant.
6. Actodromus minutilla. Abundant.
7. A. Bairdi. Abundant.
8. Ereunetes pusillus. Abundant.
9. Ibis thalassinus. Abundant.
10. Sterna regia. Abundant.
11. S. Forsteri. Abundant.

At the town of Oreana, about a day's journey above, *Ibis thalassinus* was found, and also several species of land birds, in addition to the above, as *Oreoscoptes montanus*, *Poospiza Belli Nevadensis*, *Melospiza melodia fallax*, *Xanthocephalus icterocephalus*, *Agelaius phœniceus*, *Sturnella neglecta*, etc.

g. List of species found at Soda Lake, Carson Desert (June 28, 1868).

1. Phænopepla nitens? One specimen.
2. Himantopus nigricollis. Abundant.
3. Recurvirostra Americana. Abundant.

h. Species found at Ruby and Franklin Lakes, Ruby Valley (July 18–September 4, 1868.)

1. Geothlypis trichas. Common.
2. Telmatodytes palustris paludicola. Common.
3. Coturniculus passerinus perpallidus. Common.
4. Passerculus savanna alaudinus. Abundant.
5. Agelaius phœniceus. Abundant.
6. Xanthocephalus icterocephalus. Abundant.
7. *Dolichonyx oryzivorus.* Abundant.
8. Ibis guarauna? Abundant.
9. Ardea herodias. Abundant.
10. Fulica Americana. Abundant.
11. Branta Canadensis. Abundant.
12. Anas boschas. Abundant.
13. Sterna Forsteri. Abundant.
14. Hydrochelidon fissipes. Abundant.

i. Species seen in Thousand Spring Valley (Sept. 20-25).

1. Dendroica Townsendi.
2. Zonotrichia leucophrys intermedia.
3. Empidonax obscurus.
4. Picus villosus Harrisi.
5. Sphyrapicus varius nuchalis.
6. *Nyctale acadica.*

j. Species observed at "City of Rocks," southern Idaho (October 3, 1868).

1. Corvus corax carnivorus. Common.
2. Gymnokitta cyanocephala. Abundant.
3. Cyanocitta Floridana Woodhousii. Abundant.
4. Centrocercus urophasianus. Common.
5. Rhinogryphus aura. Common.

k. Species found at Deep Creek, Northwestern Utah (Oct. 5, 1868.)

1. Telmatodytes palustris paludicola. Abundant.
2. Geothlypis trichas. Common.
3. Zonotrichia leucophrys intermedia. Abundant.
4. Melospiza melodia fallax. Abundant.
5. M. Lincolni. Common.

V. EASTERN UTAH.[4]

a. Species breeding in the Salt Lake Valley (May 20-June 2, and June 16-21, 1869).

1. Turdus migratorius.† Rare?
2. Oreoscoptes montanus. Common.
3. Galeoscoptes Carolinensis. Common.
4. Sialia arctica.† Common.
5. Troglodytes aëdon Parkmanni. Common.
6. Telmatodytes palustris paludicola. Very abundant.
7. Eremophila alpestris chrysolæma. Common.
8. Dendroica æstiva. Abundant.
9. Geothlypis trichas. Common.
10. Icteria virens longicauda. Common.
11. Setophaga ruticilla. Common.

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[4] See Bulletin of the Essex Institute, V, Nov., 1873, pp. 168-173, for paper entitled "Notes on the Bird Fauna of the Salt Lake Valley and adjacent portions of the Wahsatch Mountains."

† Species so marked have been attracted from the adjoining mountains by the protection and accommodations provided by man.

[*To be continued.*]

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 7. Salem, Mass., February, 1875. No. 2.

One Dollar a Year in Advance. 10 Cents a Single Copy.

Regular Meeting, Monday, January 18, 1875.

Meeting this evening at 7.30 o'clock. The President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence:—

From E. J. Attinelli, New York, Jan. 5; F. H. Appleton, Boston, Jan. 7; W. S. Barton, Worcester, Jan. 14; Hayden Brown, West Newbury, Jan. 9; G. W. W. Dove, Andover, Jan. 9; D. A. Gleason, Boston, Jan. 16; Julia Ward Howe, Boston, Jan. 19; Jacob Leamon, Croton, Ohio, Dec. 29.

The Librarian reported the following additions to the library:—

By Donation.

Cole, Mrs. N. D. Salem Gazette for 1874.

Green, S. A., of Boston. Miscellaneous pamphlets, 21.

Hunt, T. F. Spirit of the Fair. 1 vol. 4to. 1864. Our Daily Fare. 1 vol. 4to. 1864. Hamilton's Genealogical Tables of the Hindus. 1 vol. folio.

Perkins, Sam'l C., of Phila. Proceedings at the Laying of the Corner Stone of the New Public Buildings in Penn. Square, in Phila., July 4, 1874. 8vo pamph.

U. S. Patent Office. Official Gazette, Dec. 15, 22, 29.

Waters, J. Linton. The External Aspects of the Sun, by Prof. S. P. Langley.

By Exchange.

Harvard College. Forty-ninth Annual Report of the President. 1873-74.

Historical and Philosophical Society of Ohio. Annual Report. 1874.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record. Jan., 1875. 8vo pamph.

NEW YORK LYCEUM OF NATURAL HISTORY. Annals, Vol. xi, Nos. 1-2, July, 1874.

ROYAL CORNWALL POLYTECHNIC SOCIETY. Forty-First Annual Report, 1873. 1 vol. 12mo.

PUBLISHERS. American Journal of Science and Art. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Public Spirit. Quaritch's Catalogue. Salem Observer. Salem Post.

The meeting was principally occupied in listening to a very interesting and instructive presentation of the subject of comb manufacturing, by Hayden Brown, Esq., of West Newbury, who has been engaged for many years in the business. He gave a detailed account of the process of the manufacture of horn combs, interspersed with many entertaining anecdotes and pithy sayings. The first combs made in America were manufactured by hand, and with rude implements, in 1759, by Enoch Noyes, of Newbury, a self-taught mechanic, who cut horn buttons and coarse combs as well as he was able. He continued at this business until 1778, when William Cleland, a deserter from Burgoyne's army, a comb-maker by profession and a skilful workman, sought out Mr. Noyes and engaged with him, greatly increasing the production of combs, the manufacture of which has been continued in Newbury to this day, and immensely increased by the use of the most ingenious machines, one of which, he stated, tended by a lad of twelve years, can do the work which formerly required thirty-five men, and with his present force of fifty men, he could turn out more and better combs than a regiment of men could a half or three-quarters of a century ago.

Mr. Brown thought the earliest combs used must have been made of wood. Specimens were exhibited of the crude horn, of the material after it had gone through the several processes required, and of the several varieties of combs manufactured, beautifully finished and polished.

He referred to the immense number of cattle slaughtered every year, giving some interesting statistics to show where the horns required for such an immense manufacture came from, and stated some of his experiences abroad and at home in connection with the business. He was listened to with great attention, and the thanks of the Institute were voted to him for his entertaining and instructive address.

Mr. F. W. PUTNAM stated that combs made of various materials were in use among uncivilized nations, and mentioned the bronze combs of prehistoric times in Europe as similar to those now in use.

On motion of Mr. Putnam the thanks of the Institute were tendered to Mr. Brown for his remarks, and for his kindness in promoting the technological department of the Institute.

Arthur S. Gray, of Danvers, Jerome Horton Fiske and D. Henry Taylor of Salem, were duly elected resident members.

Adjourned.

◆

REGULAR MEETING, MONDAY, FEBRUARY 1, 1875.

MEETING this evening at 7.30 o'clock. Vice President F. W. PUTNAM in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence: —

From J. W. Dean, Boston, Jan. 18, 21; F. H. Johnson, Andover, Jan. 13; J. F. Mayer, New York, Jan. 18; A. W. Morgan, New York, Jan. 28; A. T. Perkins, Boston, Jan. 21; Charles Phillips, Philadelphia, Jan. 20; R. Ridgway, Washington, D. C., Jan. 29.

Among the donations to the cabinets announced were the commission of a letter of marque, bearing the signatures of Madison and Munroe, presented by Rev. Mr. Atwood, and a unique Indian stone implement from Peabody, presented by Mr. John V. Stevens, for each of which thanks were voted to the donors.

Prof. A. GRAHAM BELL, now a resident in Salem, occupied the evening with a singularly interesting and curiously instructive address on the subject of speech, with illustrative experiments of various kinds, and the aid of Rev. E. C. Bolles with his camera. Prof. Bell has practically introduced into this country the system of Visible Speech invented by his father, Prof. A. M. Bell of University College, London. Mr. Bell, in conjunction with Dr. Clarence J. Blake, the aurist, of Boston, has conducted a series of experiments, the remarkable results of which were now first exhibited to a public audience.

Mr. Bell had succeeded in using the *membrana tympani* of the human ear as a phonautograph. An ear from a dead subject had been experimented upon. A small style of hay was attached to one of the ossiculæ, and a hearing tube was inserted in the outer ear. When any sound was uttered into the tube, the *membrana tympani* was set in vibration, and its motion was communicated to the style. This latter was then caused to record its vibration upon a plate of smoked glass passed rapidly underneath. Mr. Bell stated that each different vowel uttered into the tube caused the style to trace a different curve upon the glass. A large number of these tracings were exhibited to the audience by means of the camera.

Mr. Bell was provided with accurate representations and models of the vocal organs and organs of hearing so as clearly to point out their several parts, even to the most delicate, and showed how sound was produced. He averred that each note was not a single tone, as it appears to be, but a composite of several, including the fundamental, or loudest, with the addition of overtones and undertones; there was no such thing as a tone pure and simple. He explained the pitch, the quality, timbre, and resonance of tones, and showed how they were produced. He showed that, as ripples are produced in the water, so wave ripples are produced in the air by different sounds, each sound causing a combination of wavelets, the curves of which can be made visible to the eye and many of which are of exceeding beauty. These were exhibited to the audience by means of a gas jet, whose vibrations were reflected in a mirror, through an ingeniously contrived apparatus, the manometric capsule invented by Scott and Kœnig. He explained how the notes of different musical instruments operated in the vibrations of the air, and what caused the differences in the sounds. In short, he gave a most attractive and instructive exposition of the mysteries of speech as it affects the air, the vocal organs, and the ear, and was listened to with the most absorbed attention.

After some complimentary remarks from Mr. W. P. Upham and the presiding officer, the thanks of the audience were unanimously voted to Prof. Bell for his able and excellent lecture.

LISTS OF BIRDS OBSERVED AT VARIOUS LOCALITIES CONTIGUOUS TO THE CENTRAL PACIFIC RAILROAD, FROM SACRAMENTO CITY, CALIFORNIA, TO SALT LAKE CITY, UTAH.

BY ROBERT RIDGWAY.

[Continued from page 24.]

12. Pyranga Ludoviciana. Common.
13. Progne subis.† Common.
14. Petrochelidon lunifrons.† Abundant.
15. Tachycineta bicolor.† Common.
16. Hirundo horreorum.† Common.
17. Cotyle riparia. Common.
18. Stelgidopteryx serripennis. Abundant.
19. Vireosylvia gilva Swainsoni. Abundant.
20. Carpodacus frontalis. Common.
21. Chrysomitris tristis. Common?
22. Passerculus savanna alaudinus. Common.
23. Coturniculus passerinus perpallidus. Common.
24. Melospiza melodia fallax. Common.
25. Poospiza bilineata. Common.
26. Spizella Breweri. Abundant.
27. S. socialis Arizonæ. Common.
28. Chondestes grammaca. Abundant.
29. Hedymeles melanocephalus. Common.
30. Cyanospiza amœna. Common.
31. Pipilo erythropthalmus megalonyx. Abundant.
32. Dolichonyx oryzivorus. Common?
33. Molothrus pecoris. Common.
34. Agelaius phœniceus. Very abundant.
35. Xanthocephalus icterocephalus. Very abundant.
36. Sturnella neglecta. Common.
37. Icterus Bullocki. Common.
38. Cyanocitta Floridana Woodhousii. Rare?
39. Tyrannus verticalis. Abundant.
40. T. Carolinensis. Common.
41. Sayornis Sayus. Common.
42. Contopus Richardsoni. Abundant.
43. Empidonax pusillus. Abundant.
44. Antrostomus Nuttalli. Common.
45. Chordeiles popetue Henryi. Common.
46. Selasphorus platycercus.† Common.
47. Trochilus Alexandri.† Common.
48. Ceryle alcyon. Common.

49. Melanerpes erythrocephalus. One specimen.
50. Colaptes auratus Mexicanus. Common.
51. Speotyto cunicularia hypogæa. Rare?
52. Circus cyaneus Hudsonius. Common.
53. Falco saker polyagrus. Common.
54. F. sparverius. Abundant.
55. Buteo Swainsoni. Abundant.
56. Zenaidura Carolinensis. Abundant.
57. Centrocercus urophasianus. Common?
58. Pediocætes phasianellus Columbianus. Common?
59. Ægialitis vociferus. Common.
60. Æ. cantianus nivosus. Very abundant.
61. Recurvirostra Americana. Very abundant.
62. Himantopus nigricollis. Very abundant.
63. Steganopus Wilsoni. Common.
64. Ereunetes pusillus. Common.
65. Actodromus minutilla. Common.
66. Tringoides hypoleucus macularius. Common.
67. Symphemia semipalmata. Abundant.
68. Numenius longirostris. Abundant.
69. Ibis guarauna. Abundant.
70. Ardea herodias. Common.
71. Herodias alba egretta. Rare?
72. Botaurus minor. Common.
73. Grus Canadensis. Common.
74. Rallus Virginianus. Common.
75. Porzana Carolina. Common.
76. Fulica Americana. Abundant.
77. Anas boschas. Abundant.
78. Dafila acuta. Common?
79. Chaulelasmus streperus. Abundant.
80. Mareca Americana. Abundant.
81. Spatula clypeata. Abundant?
82. Querquedula cyanoptera. Abundant.
83. Q. discors? Rare?
84. Nettion Carolinensis. Rare?
85. Erismatura rubida. Common.
86. Graculus dilophus. Common.
87. Sterna regia. Common.
88. S. Forsteri. Abundant.
89. Hydrochelidon fissipes. Abundant.
90. Podiceps occidentalis. Abundant.
91. P. auritus Californicus. Abundant.
92. Podilymbus podiceps. Common.

b. Species breeding only on the islands in Great Salt Lake (June, 1869).

1. Branta Canadensis. Common.
2. Pelecanus erythrorhynchus. Abundant.
3. Larus Californicus. Very abundant.

c. List of the species breeding in Parley's Park, Wahsatch Mountains, Utah (June 23–July 2; July 16–Aug. 16, 1869).

1. Turdus migratorius. Common.
2. T. Swainsoni. Abundant.
3. T. Pallasi Auduboni. Common.
4. Galeoscoptes Carolinensis. Common.
5. Sialia arctica. Common.
6. Cinclus Mexicanus. Common.
7. Regulus calendula. Common.
8. Parus montanus. Common.
9. Sitta Carolinensis aculeata. Rare.
10. S. Canadensis. Rare.
11. S. pusilla pygmæa. Rare.
12. Certhia familiaris fusca. Rare.
13. Troglodytes aëdon Parkmanni. Abundant.
14. Telmatodytes palustris paludicola. Common.
15. Eremophila alpestris (chrysolæma?). Common.
16. Helminthophaga celata. Common.
17. H. Virginiæ. Abundant.
18. Dendroica æstiva. Abundant.
19. D. Auduboni. Common.
20. D. nigrescens? Rare.
21. Geothlypis Macgillivrayi. Abundant.
22. G. trichas. Rare.
23. Icteria virens longicauda. Very rare.
24. Myiodioctes pusillus. Rare.
25. Setophaga ruticilla. Rare.
26. Pyranga Ludoviciana. Rare.
27. Progne subis. Abundant.
28. Petrochelidon lunifrons. Common.
29. Hirundo horreorum. Common.
30. Tachycineta bicolor. Abundant.
31. T. thalassina. Common.
32. Cotyle riparia. Common.
33. Stelgidopteryx serripennis. Common.
34. Vireosylvia gilva Swainsoni. Abundant.

35. Lanivireo solitaria plumbea. Rare.
36. Collurio Ludoviciana excubitoroides. Common.
37. Carpodacus Cassini. Abundant.
38. C. frontalis. Common.
39. Chrysomitris tristris. Rare.
40. C. psaltria. Rare.
41. C. pinus. Very abundant.
42. Passerculus savanna alaudinus. Rare.
43. Poocætes gramineus confinis. Common.
44. Coturniculus passerinus perpallidus. Rare.
45. Melospiza Lincolni. Common.
46. M. melodia fallax. Abundant.
47. Junco caniceps. Common.
48. Spizella socialis Arizonæ. Abundant.
49. S. Breweri. Common.
50. Zonotrichia leucophrys. Abundant.
51. Chondestes grammaca. Common.
52. Passerella iliaca schistacea. Abundant.
53. Calamospiza bicolor. One specimen.
54. Hedymeles melanocephalus. Common.
55. Cyanospiza amœna. Common.
56. Pipilo erythrophthalmus megalonyx.
57. P. chlorura.
58. Molothrus pecoris.
59. Agelaius phœniceus.
60. Xanthocephalus icterocephalus.
61. Icterus Bullocki.
62. Sturnella magna neglecta.
63. Scolecophagus cyanocephalus.
64. Corvus corax carnivorus.
65. Cyanocitta Floridana Woodhousii.
66. Cyanura Stelleri macrolopha.
67. Picicorvus Columbianus.
68. Tyrannus verticalis.
69. T. Carolinensis.
70. Myiarchus crinitus cinerascens.
71. Contopus borealis.
72. C. Richardsoni.
73. Empidonax obscurus.
74. E. flaviventris difficilis.
75. E. pusillus.
76. Antrostomus Nuttalli.
77. Chordeiles popetue Henryi.
78. Trochilus Alexandri.
79. Stellula calliope?

80. Selasphorus platycercus.
81. Ceryle alcyon.
82. Picus villosus Harrisi.
83. P. pubescens Gairdneri.
84. Sphyrapicus varius nuchalis.
85. Sphyrapicus thyroideus. Rare.
86. Colaptes auratus Mexicanus. Common.
87. Bubo Virginianus arcticus. Rare.
88. Falco saker polyagrus. Rare.
89. F. sparverius. Common.
90. Circus cyaneus Hudsonius. Rare.
91. Nisus Cooperi. Rare.
92. N. fuscus. Rare.
93. Buteo borealis calurus. Common.
94. B. Swainsoni. Abundant.
95. Archibuteo lagopus Sanctijohannis. Rare.
96. Aquila chrysaëtos Canadensis. Common.
97. Rhinogryphus aura. Common.
98. Zenaidura Carolinensis. Abundant.
99. Canace obscura. Abundant.
100. Bonasa umbellus umbelloides. Rare?
101. Centrocercus urophasianus. Common.
102. Pediocætes phasianellus Columbianus. Common.
103. Ægialitis vociferus. Common.
104. Gallinago gallinaria Wilsoni. Common.
105. Ereunetes pusillus. Rare.
106. Actodromus minutilla. Rare.
107. Symphemia semipalmata. Rare.
108. Tringoides hypoleucos macularius. Common.
109. Rhyacophilus glareola solitarius. Rare.
110. Numenius longirostris. Rare.
111. Grus Canadensis. Rare.
112. Porzana Carolina. Common.
113. P. Jamaicensis? Common.
114. Fulica Americana. Rare.
115. Anas boschas. Rare.
116. Querquedula cyanoptera. Rare.

d. Pack's Cañon, western spur of Uintah range (July 3–8, 1869).

The fauna of this locality was exactly like that of Parley's Park, with the exception that *Cyanura Stelleri macrolopha* was more abundant.

e. Kamas Prairie (July 9, 1869).

The only species seen in this grassy valley, which was not noticed elsewhere, was the *Actiturus Bartramius.*

f. Cañon of the Provo River (July 10, 1869).

The following species not found by us elsewhere were abundant among the willows bordering the river:

1. Turdus fuscescens.
2. Parus atricapillus septentrionalis.

There were also found *Setophaga ruticilla* and *Galeoscoptes Carolinensis* in plentiful numbers, and *Pica melanoleuca Hudsonica*, which in other localities in Utah was found to be rare or entirely wanting.

CATALOGUE OF THE BIRDS ASCERTAINED TO OCCUR IN NEVADA.

The following is a complete list of the birds known at the present time to occur within the limits of the State of Nevada. The number will doubtless be considerably increased in the course of time, when portions of the state not visited by us shall have been explored. Those marked with an asterisk (*) breed within the limits of the State; those distinguished by a dagger (†) belong to the western portion, and those with a ‡ are more abundant in the eastern part, being stragglers from the Rocky Mountains.

*1. Turdus migratorius L.
2. T. Pallasi Cab., *var.* nanus Aud.†
3. T. Swainsoni Cab.‡
*4. T. Swainsoni Cab., *var.* ustulatus Nutt.†
*5. Oreoscoptes montanus (Towns.).
*6. Sialia Mexicana Sw.†
*7. S. arctica Sw.
*8. Cinclus Mexicanus Sw.
*9. Regulus calendula (L.).
10. R. satrapa Licht.
*11. Lophophanes inornatus (Gamb.).†
*12. Parus montanus Gamb.
13? P. atricapillus L.,‡ *var.* septentrionalis Harris.
*14. Psaltriparus minimus (Towns.), *var.* plumbeus Baird.
15? Psaltriparus melanotis (Hartl.)‡
*16. Sitta Carolinensis Gm., *var.* aculeata Cassin.‡
*17. S. Canadensis L.
*18. S. pusilla Lath.,‡ *var.* pygmæa Vig.
*19. Certhia familiaris L., *var.* fusca Bart.
*20. Campylorhynchus brunneicapillus (Lafr.).
*21. Salpinctes obsoletus (Say).
*22. Catherpes Mexicanus (Sw.), *var.* conspersus Ridgw.

*23. Troglodytes aëdon V., *var.* Parkmanni Aud.
24. T. parvulus Koch, *var.* hyemalis Wils.
*25. Telmatodytes palustris (Wils.), *var.* paludicola Baird.
26. Anthus Ludovicianus (Gm.).
*27. Helminthophaga Virginiæ Baird.‡
28. H. ruficapilla (Wils.).‡
*29. H. celata (Say).
30. H. celata (Say), *var.* lutescens Ridgw.†
*31. Dendroica æstiva (Gm.).
32? D. occidentalis (Towns.).
33. D. Townsendi (Nutt.).
*34. D. nigrescens (Towns.).‡
*35. D. Auduboni (Towns.).
*36. Geothlypis trichas (L.).
*37. G. Philadelphia (Wils.), *var.* Macgillivrayi Aud.
*38. Icteria virens (L.), *var.* longicauda Lawr.
*39. Myiodioctes pusillus (Wils.).
40. M. pusillus (Wils.), *var.* pileolata Pall.†
*41. Pyranga Ludoviciana (Wils.).
*42. Hirundo horreorum Barton.
*43. Tachycineta bicolor (V.).
*44. T. thalassina (Sw.).
*45. Cotyle riparia (L.).
*46. Stelgidopteryx serripennis (Aud.).
*47. Petrochelidon lunifrons (Say).
*48. Progne subis (L.).
49. Ampelis cedrorum (V.).‡
*50. Phænopepla nitens (Sw.).
*51. Myiadestes Townsendi (Aud.).
*52. Vireosylvia gilva (V.), *var.* Swainsoni Baird.
53. Lanivireo solitaria (Wils.).
54. L. solitaria (Wils.), *var.* Cassini Baird.†
*55. L. *var.* plumbeus Coues.‡
*56. Collurio Ludovicianus (L.), *var.* excubitoroides Sw.
*57. Carpodacus Cassini Baird.
*58. C. frontalis (Say).
*59. Loxia leucoptera (Wils.).
60. L. curvirostra L., *var.* Americana (Wils.).
61. Leucosticte tephrocotis Sw., *var.* littoralis Baird.
*62. Chrysomitris tristis (L.).
*63. C. pinus (Wils.).
64. Plectrophanes lapponicus (L.).
*65. Passerculus savanna (Wils.), *var.* alaudinus Bonap.
*66. Pooecetes gramineus (Gm.), *var.* confinis Baird.

*67. Coturniculus passerinus (Wils.), *var.* perpallidus Ridgw.
*68. Melospiza Lincolni (Aud.).
*69. M. melodia (Wils.).‡
*70. *var.* fallax Baird.
*71. *var.* Heermanni Baird.†
72. *var.* guttata Nutt.
*73. Poospiza bilineata (Cass.).
*74. P. Belli (Cass.), *var.* Nevadensis Ridgw.
*75. Junco hyemalis (L.), *var.* Oregonus (Towns.)†
76. Spizella monticola (Gm.).
*77. S. socialis (Wils.), *var.* Arizonæ Coues.
*78. S. Breweri (Cass.).
79. Zonotrichia leucophrys (Forst.).‡
*80. Z. leucophrys (Forst.), *var.* intermedia Ridgw.†
81. Z. coronata (Pall.).†
*82. Chondestes grammaca (Say).
*83. Passerella iliaca (Merrem),‡ *var.* schistacea Baird.
*84. Passerella iliaca (Merrem), *var.* megarhynchus Baird.†
*85. Hedymeles melanocephalus (Sw.).
*86. Cyanospiza amœna (Say).
*?87. Guiraca cærulea (L.).
*88. Pipilo erythrophthalmus (L.), *var.* Oregonus Bell.†
*89. *var.* megalonyx Baird.‡
*90. P. chlorurus (Towns.).
*91. Eremophila alpestris (Forst.).
92. E. alpestris (Forst.), *var.* leucolæma Coues.
*93. *var.* chrysolæma Wagl.
94. Dolichonyx oryzivorus (L.),‡ *var.* albinucha Ridgw.
*95. Agelaius phœniceus (L.).
*96. A. phœniceus (L.), *var.* gubernator Wagl.†
*97. anthocephalus icterocephalus (Bonap.).
*98. Molothrus pecoris (Gm.).
*99. Sturnella magna (L.), *var.* neglecta Aud.
*100. Icterus Bullocki (Sw.).
*101. Scolecophagus cyanocephalus (Wagl.).
*102. Corvus corax L., *var.* carnivorus Bartr.
103. C. Americanus Aud.
*104. Picicorvus Columbianus (Wils.).
*105. Gymnokitta cyanocephala Max.
*106. Pica melanoleuca V., *var.* Hudsonica Sab.
*107. Cyanura Stelleri (Gm.),† *var.* frontalis Ridgw.
*108. Cyanocitta Floridana (Bartr.), *var.* Californica Vig.
*109. *var.* Woodhousii Baird.‡
*110. Tyrannus Carolinensis (L.).

*111. T. verticalis Say.
*112. Myiarchus crinitus (L.), *var.* cinerascens Lawr.
*113. Sayornis Sayus (Bonap).
*114. Contopus borealis (Sw.).
*115. C. Richardsoni (Sw.).
*116. Empidonax pusillus (Sw.).
*117. Empidonax flaviventris Baird, *var.* difficilis Baird.
*?118. E. Hammondi Baird.
*119. E. obscurus (Sw.).
*120. Antrostomus Nuttalli (Aud.).
*121. Chordeiles popetue (V.), *var.* Henryi Cass.
*122. Panyptila saxatilis (Woodh.).‡
*123. Nephœcetes niger (Gm.), *var.* borealis Kennerly.†
*124. Chætura Vauxi (Towns.).†
*125. Trochilus Alexandri Bourc.
*126. Selasphorus rufus (Gm.).
*127. S. platycercus (Sw.).
*128. Stellula calliope Gould.
*129. Ceryle alcyon (L.).
*130. Coccyzus Americanus (L.).
*131. Picus albolarvatus (Cass.).†
*132. P. villosus L., *var.* Harrisi Aud.
*133. P. pubescens L., *var.* Gairdneri Aud.
134. Picoides arcticus (Sw.).
*135. Sphyrapicus varius (L.), *var.* nuchalis Baird.
*136. *var.* ruber Gm.†
*137. S. thyroides (Cass.).
*138. Melanerpes torquatus (Wils.).
139. Colaptes auratus (L.), *var.* hybridus Baird.
*140. *var.* Mexicanus Sw.
*?141. C. chrysoides Malh.
*142. Bubo Virginianus (Gm.), *var.* Arcticus Sw.
*143. Otus vulgaris (L.), *var.* Wilsonianus Less.
144. Nyctale acadica (Gm.).
*145. Speotyto cunicularia (Mol.), *var.* hypugæa Bonap.
*146. Falco communis Gm., *var.* anatum Bonap.
*147. F. saker Schl., *var.* polyagrus Cass.
*148. F. Columbarius L.
*149. Falco sparverius L.
*150. Pandion haliaëtus (L.), *var.* Carolinensis Gm.
*151. Circus cyaneus L., *var.* Hudsonius L.
*152. Nisus Cooperi (Bonap.).
*153. N. fuscus (Gm.).
*154. Buteo borealis (Gm.), *var.* calurus Cass.

*155. B. Swainsoni Bonap.
*156. Archibuteo ferrugineus (Licht.).
*157. A. lagopus (Brunn.), *var.* Sancti-Johannis Gm.
*158. Aquila chrysaëtos (L.), *var.* Canadensis L.
*159. Haliaëtus leucocephalus (L.).
*160. Rhinogryphus aura (L.).
161. Ectopistes migratoria (L.).‡
*162. Zenaidura Carolinensis (L.).
*163. Canace obscura (Say).
*164. Bonasa umbellus (L.), *var.* umbelloides Dougl.‡
*165. Pediœcetes phasianellus (L.), *var.* Columbianus Ord.
*166. Centrocercus urophasianus (Bonap.).
*167. Oreortyx pictus (Dougl.),† *var.* plumifera Gould.
*168. Ægialitis vociferus (L.).
*169. Recurvirostra Americana Gm.
*170. Himantopus nigricollis V.
*171. Steganopus Wilsoni (Sab.).
*172. Gallinago gallinaria (Gm.), *var.* Wilsoni Temm.
*173. Ereunetes pusillus (L.).
174. Actodromus Bairdi Coues.
*175. A. minutilla (V.).
176. Pelidna alpina (L.), *var.* Americana Cass.
*177. Symphemia semipalmata (Gm.).
*178. Rhyacophilus glareola (L.), *var.* solitarius Wils.
*179. Tringoides hypoleucus (L.), *var.* macularius L.
*180. Numenius longirostris (Wils.)
181. Tantalus loculator L.
*182. Ibis guarauna (Gm.).
*183. I. thalássinus Ridgw.†
*184. Ardea herodias L.
185. Herodias alba (L.), *var.* egretta Gm.
*186. Nyctiardea grisea (L.), *var.* nævia Bodd.
*187. Botaurus minor (Gm.).
*188. Ardetta exilis (Gm.).
*189. Grus Canadensis (L.).
*190. Rallus Virginianus L.
*191. Porzana Carolina (L.).
*192? P. Jamaicensis (Gm.).‡
*193. Fulica Americana Gm.
194. Cygnus buccinator Rich.
195. Anser hyperboreus Pall.
*196. Branta Canadensis (L.).
197. B. Hutchinsi Rich.
198. B. bernicla (L.), *var.* nigricans Lawr.

*199. Anas boschas L.
*200. Chaulelasmus streperus (L.).
*201. Mareca Americana (Gm.).
*202. Nettion Carolinensis (Gm.).
*203. Querquedula cyanoptera (V.).
*204. Q. discors (L.).
*205. Dafila acuta (L.).
*206. Spatula clypeata (L.).
207. Aix sponsa (L.).
208. Fulix marila (L.).
209. F. marila (L.), *var.* affinis Eyton.
210. F. collaris (Donov.).
211. Aythya vallisneria (Wils.).
212. A. ferina (L.), *var.* Americana Eyton.
213. Bucephala albeola (L.).
214. B. clangula (L.), *var.* Americana Bonap.
*215. Erismatura rubida (Wils.).
216. Mergus merganser (L.), *var.* Americanus Cass.
217. Mergus serrator L.
218. Lophodytes cucullatus (L.).
*219. Pelecanus erythrorhynchus Gm.
*220. Graculus dilophus (Sw.).
*221. Larus argentatus Brünn., *var.* Californicus Lawr.
222. L. Delawarensis Ord.
*223. Sterna regia Gambel.
*224. S. Forsteri Nutt.
*225. Hydrochelidon fissipes (L.).
*226. Æchmophorus occidentalis (Lawr.)
*227. Podiceps auritus (L.), *var.* Californicus Heerm.
*228. Podilymbus podiceps (L.).

Total number of species known to breed in Nevada, 179.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., MARCH, 1875. No. 3.

One Dollar a Year in Advance. Ten Cents a Single Copy.

QUARTERLY MEETING, WEDNESDAY, FEB. 10, 1875.

MEETING this afternoon at three o'clock. VICE PRESIDENT F. W. PUTNAM in the chair. Records of the preceding quarterly and regular meetings were read.

Frank L. Smith, of Salem, was elected a resident member.

Mr. PUTNAM mentioned that the Misses Mary E. and Abby O. Williams, of Salem, would be willing to deposit, in the rooms of the Institute, temporarily, their valuable collection of paintings, many of which were copied by them from the "old masters," during a residence in Rome of several years.

After some conversation, the subject was referred to the Curators of the Department of Art, to make such arrangements with the Misses Williams as may be deemed advisable; on the understanding that the collection shall be properly cared for by the curators, and that the Institute be not held responsible in case of fire or accident; also to tender to the Misses Williams the sincere thanks of the Institute for this liberal proposal.

The committee appointed at a previous meeting presented as their report a new draft of the Constitution and By-laws of the Institute. After some discussion it was

Voted, That a copy of the report be placed in the rooms of the Institute, and that the same be presented at the Annual Meeting in May, for further action.

Regular Meeting, Monday, February 15, 1875.

Meeting this evening at 7.30 o'clock. Vice President F. W. Putnam in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence:—

From E. J. Attinelli, New York, Feb. 6; Francis H. Appleton, Boston, Feb. 13; Charles H. Bell, Exeter, N. H., Feb. 5; E. P. Boon, New York, Feb. 2; John M. Bradbury, Ipswich, Feb. 1, 4; C. H. Dall, Boston, Feb. 13; W. H. Dall, Washington, Feb. 1; George Haskell, Ipswich, Feb. 11; A. H. Hoyt, Boston, Feb. 8; Joseph K. Jenness, Haverhill, Feb. 12; Jacob Leamon, Croton, Ohio, Jan. 25; J. H. Leavitt, Feb. 2; E. J. Maynard, Newtonville, Feb. 11; Henry Morton, Hoboken, N. J., Jan. 26; J. W. Moulton, Feb. 10; Nathaniel Paine, Worcester, Feb. 12; W. S. Perry, Geneva, N. Y., Feb. 9; B. Perley Poore, Indian Hill Farm, near Newburyport, Feb. 1; Cyrus Woodman, Cambridge, Feb. 10; Bern, Die Naturforschende Gesellschaft, Aug. ; Dresden, K. Leopoles caro, Deutschen Acad. der Naturforschende, Nov. 17; Emden, Naturforschende Gesellschaft, Sept. 11; Freiburg, Die Naturforschende Gesellschaft, Sept. 8; Genevé Société de Physique et d' Histoire Naturelle, Sept. 15; Neuchatel Société des Sciences Naturelles, Oct. 19; Yale College, Feb. 9; Zurick, Naturforschende Gesellschaft, Oct. 1.

The Librarian reported the following additions to the library:—

By Donation.

Bolles, E. C. Miscellaneous pamphlets, 5.

Humphreys, Brig. Gen. A. A. Annual Report of the Chief of Engineers. Pts. 1, 2, 1874. 2 vols. 8vo.

Lee, John C. Commercial Bulletin, Jan. 2, 9, 16, 1875.

Mass. Horticultural Society. Schedule of Prizes offered by the Mass. Horticultural Society for 1875.

Peabody Institute, Danvers. Seventh Annual Report of the Trustees of the, Year ending March 31, 1874.

Phillips, Chas., of Germantown, Penn. Railroad Report of Penn., 1863. 1 vol. 8vo. The American Historical Record, 8 numbers. Miscellaneous pamphlets, 91. Almanacs, 1870, 1871.

Putnam, H. W. Directory of Peabody, Danvers, Marblehead, 1873. 1 vol. 8vo. N. E. Business Directory, 1873. 1 vol. 8vo. Essex County Directory, 1873. 1 vol. 8vo. Mass. Register and Business Directory, 1872. 1 vol. 8vo.

Ropes, W. L., of Andover, Mass. Catalogue of Andover Theol. Seminary, 1874–75.

U. S. Patent Office. Official Gazette, Jan. 5, 12, 1875.

Waters, J. L. Miscellaneous pamphlets, 50.

Williams, James, of Columbus, Ohio. Annual Report of the Auditor of the State of Ohio, 1874. 1 vol. 8vo.

By Exchange.

Accademia d' Agricoltura Commercio ed Art di Verona. Memoire, Vol. L, II Serie, Fasc. II, 1874. Vol. L, II Serie, Fasc. I, II, 1874.

Crosse et Fischer. Journal de Conchyliol. 3e Série, Tome xiv, No. iv, 1874.

Institut Historique, Paris. L' Investigateur. 40 Année. No. vi, Nov., 1874.

Kaiserliche Leopoldinisch-Carolinische Deutschen Akademie der Naturforscher in Dresden. Leopoldina, Heft vii, viii, ix, 1871, 1872, 1873.

Naturforschende Gesellschaft in Bern. Mittheilungen, Nos. 812–827, 1873.

Naturforschende Gesellschaft in Freiburg. Berichte, Band vi, Heft II, III, 1873. 2 pamphlets.

Naturforschende Gesellschaft, Zurich. Vierteljahrsschrift, Jahrg. xviii, 1873.

Naturforschende Gesellschaft in Emden. Jahresbericht, 1873. 8vo. 1874.

New England Historic-Genealogical Society. New England Historical and Genealogical Register. Jan., 1875.

Société d' Acclimation, Paris. Bulletin Mensuel, 3me Série, Tome i, No. 10, Oct., 1874.

Societe d' Anthropologie, Paris. Bulletins, Tome ix, 11e Série, 2e Fascicule, 1874.

Société des Sciences Naturelles, Neuchatel. Bulletin, Tome x, 1873–4. Memoires, Tome iv, 2nd pt., 1874.

Société de Physique et d' Histoire Naturelle, Genéve. Memoires, Tome xxiii, 2nd pt., 1873–74.

Publishers. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Public Spirit. Sailors' Magazine and Seamen's Friend. Salem Post. Salem Observer.

Mrs. C. A. Carlton, of Salem, was elected a resident member.

Rev. **George Batchelor** presented a memoir of our late associate, Hon. **Benjamin F. Browne**, of Salem. Referred to the publication committee.

Mr. **John Robinson** read the following paper, illustrating the same with diagrams and specimens:—

FERNS OF ESSEX COUNTY, MASS.

One of the most important objects of the Essex Institute is the collecting and investigation of Essex County products of every sort. Oakes, Russell, Nichols, Fowler, Putnam, Packard, Hyatt, Tracy and others have each in turn worked at this, and all seem to have agreed in leaving the ferns for some one else to look up. The rocks, insects, fishes, birds, mammals, early inhabitants and Indian remains, flowering plants, mosses, and lichens, have been more or less fully reported upon; but the ferns, even so abundant and conspicuous as they are, were omitted. Searching the publications of Essex County societies, no notice or list of ferns is to be found; even Tracy's "Plants of Lynn" stops just upon them. I have for some years been interested in these curious and beautiful plants, and have given special notice to those in our county and have searched myself with friends in the following localities, thoroughly or in part:—Lynn, Swampscott, Saugus, Lynnfield, Danvers, Peabody, Salem, Beverly, Manchester, Essex, Gloucester, Rockport, Ipswich, Newbury, North Andover, Bradford, Wenham, Topsfield, Marblehead, Groveland, Middleton, and have had the assistance of Mrs. C. N. S. Horner, of Georgetown, who kindly gives me the localities for that region, about which I know very little myself.

Among the older botanists, now gone, who gave ferns some particular notice, was William Oakes, of Ipswich, and judging from looking over the beautifully prepared

left to tell of his earnest labor as a botanist,
nk he had noticed about two-thirds of our
.

ngement in this paper is according to Gray's
th edition, where full descriptions of each
l be found.[1]
e represented in the county, so far as is now
ixteen genera, including twenty-nine species and
ght book varieties. A very few species may
be added after a careful search, but that is ex-
doubtful.
ll take these species in order, and notice each sep-
y, commencing with: —

1. ONOCLEA SENSIBILIS L.

Sensitive Fern.

called on account of the habit of quickly turning black after the
frosts. The fertile and sterile fronds are entirely different in ap-
rance, the former not showing themselves till August and then
coming rigid and remaining perfect almost through a second season,
hile the sterile fronds commence to unfold early in May, are very
road, and perish at the first frost. Common everywhere.

2. A very curious abnormal form is the var. *obtuselobata* of Torrey, not a true variety but only an occasional state of a frond of the ordinary plant. This illustrates how the sterile and fertile fronds in dimorphous ferns can be shown to resemble each other and is only a half-way state between sterile and fertile, so to speak. Frequent, with No. 1.

3. STRUTHIOPTERIS GERMANICA Willd.

Ostrich Fern.

This is the tallest of all New England ferns, growing to a height of six feet, and yet it is one of the most graceful of our species. It is not coarse, and spreads by numerous underground runners, filling whole fields in parts of New Hampshire and Vermont, where I have walked among plants, though not of the largest growth, with only my head above them. Like the last, the fruit spike is separate and rigid, often found the second year black and persistent, while the spikes of that season are new and green. I included this in the list of Essex County ferns, as the place from which I knew it was but just beyond the county line in North Reading, towards Middleton, not nearer one town than the other. I have since heard from Mrs. Horner, who reports it from Georgetown; she, therefore, is first to add this truly noble fern to our county list.

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[1] It should be noted that this paper was illustrated by perfect herbarium specimens of each species and variety referred to, rendering botanical descriptions unnecessary. English names are added for each species, though many are poor enough.

4. WOODSIA ILVENSIS R. Br.

Hairy Woodsia.

This is a rare fern in Europe, but here is very abundant, particularly on the hills about Salem. A short, woolly plant growing in tufts. It is found in Danvers, Swampscott, Wenham, and in fact in almost every hilly town.

5. WOODSIA OBTUSA Torrey.

Blunt Woodsia.

Not so abundant as the last, taller and more delicate. The small forms resemble *Cystopteris fragilis*, with which it often grows. There is a fine locality for this at Peabody, on the Swampscott road, and it is to be found in Salem pastures, Beverly, Middleton and elsewhere.

6. DICKSONIA PUNCTILOBULA Kunze.

Hay-scented Fern.

This is the only American representative of a genus which in the tropics boasts of the noblest of tree ferns, including the *D. antarctica* of Tasmania, the trunk of which rises to the height of thirty or forty feet, crowned by a circle of enormous fronds, some even twenty feet to their tips. Our humble Dicksonia is one of our most common and yet most beautiful ferns. It grows by creeping, underground stems, and sometimes is found with fronds three or four feet high; the fruit is very small on the little lobes of the pinnules, the fronds are much dissected and almost always widest at the base. When crushed it has a very pleasant aromatic odor, and after a frost this is quite noticeable in the woods where the plants grow.

7. CYSTOPTERIS FRAGILIS Bernh.

Delicate Bladder Fern.

This will be found in old stone walls where the earth is banked up high at the back, and in damp, rocky woods or ravines. There are many fine localities in Salem, Beverly, Essex, Swampscott and elsewhere. This is an early fern and often in dry seasons by August the fruit will have perfected and the fronds entirely have disappeared (it should be looked for in June). I found at Essex in September, 1878, a plant that, thinking the dry summer was its winter rest, had with the September rains again started; I collected several fine young fronds at that late date.

This varies considerably; the less cut form is var. *dentata*, but not approving of naming every variation, as some seem to do, the most prominent ones only are given in this list.

8. ADIANTUM PEDATUM L.

Maiden Hair.

By many considered our most beautiful fern, and when seen in the grand clumps two feet or more high, as I have seen them in this county at the fine locality in North Andover, one can hardly find in any conservatory a more elegant, graceful or delicate fern. It grows sparingly in Salem, Danvers, Lynnfield, Georgetown and some other places. In the western part of this state, Vermont and southward, it is found by the acre. It varies but slightly even in Californian specimens.

9. PTERIS AQUILINA L.

Eagle Fern. Bracken.

Common along railroad tracks and gravelly places skirting and in the woods. This is in England one of the rankest growing ferns, sometimes attaining a height of twelve feet. I think six feet from the ground to the tip, when lifted up, is the extreme that has been noticed here. Most beautifully crisped forms and often strange developments of the pinnules may be found in the county specimens, some of which approach the var. *caudata* which grows south.

10. WOODWARDIA VIRGINICA Smith.

Chain Fern.

(The fruit upon the underside of the fertile pinnules is in short lines, resembling the links of a chain.)

In searching for this fern I spent three days before finding it in a locality now nearly destroyed, known to Mr. Russell. Since then I have found it growing profusely around many ponds or in swamps at Beverly, Hamilton, Essex, Manchester, Wenham, Georgetown (Mrs. Horner), etc. This is the only fern I have ever observed growing *under* water. Many grow near the water, but this I have repeatedly found growing, even at low water seasons, with the rhizome creeping out into the pond, with little if any earth over it, which seems at variance with the rest of the ferns hereabouts.

11. ASPLENIUM TRICHOMANES L.

Dwarf Spleenwort.

A charming little fern growing upon the rocks, with its black, thread-like roots working their way so deep into the crevices that it is with difficulty removed without breaking them off. This varies greatly in size, but in the cutting very slightly. Not rare; good localities in Peabody, Marblehead, Georgetown, etc.

12. ASPLENIUM EBENEUM Ait.

Ebony Spleenwort.

Found in pine woods near rocks, but not so much on and in them as No. 11, which in general style it resembles, although never to be mistaken for it. A much serrated form is frequently met with, and the fronds are often found split, forming a double apex. Found in nearly every town; fine localities in Beverly, Essex, etc.

13. ASPLENIUM THELYPTEROIDES Michx.

Silvery Spleenwort.

This is a rare fern with us but very abundant in Vermont and western Massachusetts, particularly near the eastern end of the Hoosac tunnel, on the path to the "twin cascades." The fruit on the fertile pinnules is very regular and distinct, a very beautiful object under the microscope. The only plant I know of this is at Swampscott. It is at Georgetown (Mrs. Horner), Lynnfield (Russell), and "with Mr. Oakes it was a favorite fern and found by him at Ipswich." (Prof. Tuckerman.)

14. ASPLENIUM FILIX-FŒMINA Bernh.

Lady Fern.

The most abundant and variable of all our ferns, except, perhaps, *Aspidium spinulosum*. It grows everywhere, in sun and shade, and often so much fruited that the fronds will look black. It sometimes is found nearly four feet high, and one quite marked variety has the lower pinnæ as long, if not longer than the rest, while in the common form they are conspicuously reduced.

Some will confound this with *Dicksonia*, when not in fruit, and with *Aspidium spinulosum*, but the difference will be readily seen upon examination. Common everywhere.

15. ASPIDIUM ACROSTICHOIDES Swartz.

Christmas Fern.

It is found abundantly near the first pond on the road to the Chebacco house, Essex: also in Beverly woods; near the turnpike and floating bridge; Andover; Danvers, etc. This is a rigid, evergreen species, and is very abundant north and south; one of the best for decorative purposes, as it keeps well. There is some variation to the cutting of the fronds, and one is called var. *incisum*. The peculiar fruiting of this fern distinguishes it from all others of our species, hence the name acrostichoides, for the fruit dots becoming confluent, the pinnæ curl, and the whole looks as if one mass of spore cases, as it is with the genus Acrostichum, hence resembling Acrostichum, or Acrostichoides.

16. ASPIDIUM THELYPTERIS Swartz.

Marsh Fern.

Formerly this fern was confused with *A. Noveboracense*, but the conspicuously reduced pinnæ of the latter, as well as the lighter color, should have been noticed as distinguishing points; it is also quite different in the fruiting. Found in every meadow and by every roadside as well as in deep woods and in bogs. Perfect specimens can be found in *full* fruit from *six inches* to *five feet high*, and from one inch to one foot wide. Where it grows exposed to the sun the pinnæ are curled up and quite angular, while in the shade they are less fruited, wide spreading and more delicate.

17. ASPIDIUM NOVEBORACENSE Swartz.

New York Fern.

More delicate than the last, not revolute when well fruited, and growing in less wet places. Common in the woods. By the latter part of September this and the Dicksonia become, under favorable circumstances, pure white, and form a very beautiful addition to the decorating ferns for winter.

18. ASPIDIUM SPINULOSUM Swartz.

Prickly Toothed Wood Fern.

This is the typical form of a most protean species, varying from plants perfectly fruited only six inches high to heavy forms four feet high; and in width from six inches on a plant four feet high to more than a foot on a plant but two feet high. And here is not all; the variations in cutting are as great as those of height and width. We find it not twice pinnate and fully three times so, with fruit scarcely visible, and dots so large as to be plainly seen at quite a distance. Sometimes the lower pinnæ are much reduced, sometimes very much extended. To take prominent varieties one would at a glance pronounce them very different species, so much more do they vary in appearance than many species which are distinct; but I can show a suite of specimens which run so gradually from one to another that it will at once be seen that to draw a separating line would be quite impossible, and the best that can be done is to name the prominent forms as varieties. The typical plant is rare and as yet I have only found it at Essex. Doubtless other localities will be discovered.

19. Var. *intermedium.* The common form will be found in nearly every patch of woods.

20. Var. *dilatatum* is a larger and more cut form, most common at the mountain regions of New Hampshire. A near approach to it can be obtained at Essex, Beverly, Georgetown (Mrs. Horner), etc.

21. Var. *Boottii* is much more narrow, reduced at the base. This, to judge from the specimens I find, which are very numerous, seems to resemble much more closely *A. cristatum* than *A. spinulosum.* The sterile fronds particularly resemble each other in these two species and it is often very difficult to decide to which they belong. Is it possible that this can be a hybrid between *A. spinulosum* and *A. cristatum?* Found in shady, swampy land.

22. ASPIDIUM CRISTATUM Swartz.

Crested Buckler Fern.

Not so common as some varieties of the last. It grows in similar localities, but seldom more than one or two clumps in a place together. The fertile fronds are usually much taller than the sterile and perish during the winter, while the sterile ones of the previous year are found quite perfect the next spring.

Found in nearly every town in localities similar to the last.

23. ASPIDIUM MARGINALE Swartz.

Marginal or Evergreen Wood Fern.

(So called as the fruit is close to the edge or margin of the pinnule, and the fronds are often found as perfect in spring as they were before winter came.)

This fern is of a beautiful blue-green and is found in rocky woods, where the foliage is not thickest. The fronds are twice pinnate and occasionally found still more cut. Eight years since I collected in Swampscott a plant with very broad and much cut fronds. This I have had under cultivation ever since. It keeps its distinct character, which is strikingly different from the ordinary form. For convenience I have ticketed herbarium specimens from this as var. *elegans*. Small forms scarcely six inches high and perfectly fruited are often met with.[1] It grows in almost every town in the county.

24. POLYPODIUM VULGARE L.

Common Polypody.

One of our most common ferns, found on rocks and in mossy woods. This fern has a great many curious forms and in the English fern books as many as twenty varieties are described, but as it is useless to undertake to book varieties which are likely to rise to the hundreds it is best to throw out all but those which are well established as being sufficiently different from the typical form and constantly remain so. Found everywhere.

25. PHEGOPTERIS POLYPODIOIDES Fée.

Beech Fern.

Grows in the Essex woods and I have found it in two places in Common lane, Beverly; it grows in Danvers (Miss Page). This is a White and Green Mountain fern and, with the next, is rare here. These two species of Phegopteris usually are found in about the same localities, growing together in Essex, and quite near each other in Beverly. This one almost runs into *P. hexagonoptera* which occurs about us, and which I hope may yet be found here.

26. PHEGOPTERIS DRYOPTERIS Fée.

Oak Fern.

This as the last is a mountain fern and is found in localities with it. Both are European Ferns as well as American. Found in Essex, Beverly, Georgetown (Mrs. Horner).

27. OSMUNDA REGALIS L.

Royal Flowering Fern.

Common in almost all meadows. Sometimes six feet high. Called flowering fern on account of its having the upper pinnæ changed to a spike of fruit. Sometimes it will be found with fertile and sterile pinnules on the same little division of the frond.

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[1] This comes nearer being a tree fern than any of our species, the caudex covered by the bases of the fronds of previous seasons, sometimes resting upon bare rocks for four or five inches without roots or fronds.

28. OSMUNDA CLAYTONIANA L.

Interrupted Flowering Fern.

(So called as the fruit is found in the middle of the frond, with sterile pinnæ above and below the fruited ones.) A sterile frond closely resembles that of the next, but is more delicate, broader towards the top, and the segments more rounded. Specimens are found fruited nearly all the way up from the base and one I believe clear to the top. Common; fine localities in North Andover, Topsfield and Salem.

29. OSMUNDA CINNAMOMEA L.

Cinnamon Fern.

(So called from its color when coming into fruit.) Familiar to all in pastures and by the roadside, throwing up its tall spikes of fruit in the centre of a whorl of sterile fronds. Often when in the shade I have found sterile fronds of this six feet long.

30. Var. *frondosa* is a state where a portion of the sterile frond becomes fertile, very curiously imitating the fertile fronds of No. 28. Found everywhere.

31. LYGODIUM PALMATUM Swartz.

Climbing Fern.

Found at Saugus. I have not searched for it myself, but add it on the authority of Mr. G. E. Emery, of Lynn, a specimen being in the Institute collection from him.[3] All know this fern, and a description is unnecessary. Judging by the way it is sold in Boston one can hardly help thinking that if the practice of tearing it up so recklessly continues, it will soon be quite scarce, even at the Windsor and Concord localities.

32. OPHIOGLOSSUM VULGATUM L.

Adder's Tongue Fern.

I know of but one locality for this in the county, in Beverly, where it was first noticed by J. H. Emerton, 1872. No doubt others are to be found, as owing to its inconspicuous habits the fern is easily overlooked. Meadows and wet ground about the clumps of bushes and hummocks are the places to be searched for it.

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[3] The above locality is endorsed by Mr. C. M. Tracy.

83. BOTRYCHIUM TERNATUM Swartz.

Ternate Grape Fern.

The Botrychiums form one of the most interesting genera of ferns we here have represented. There are but ten recognized species of Botrychium known in the world, seven of which grow in America. Our two larger forms are very distinct, but the smaller ones seem to run into each other, though there are distinctions not at once noticeable to a casual observer. *B. ternatum* has two perfect fronds, one sterile and one fertile, distinct to the ground. The typical form is found in California growing to great size, while here the fertile frond seldom exceeds ten inches in height, with a sterile frond five inches across. Found at Essex, 1872-4.

84. Var. *lunarioides* has more rounded segments than the typical. The finest specimen I ever saw was found by Mrs. Horner, in Georgetown.

85. Var. *obliquum*. The segments are longer, and are quite oblique to the rachis.

86. Var. *dissectum*. The whole frond is cut and recut till almost entirely reduced to points. Nos. 84, 85, 86, are found both in wet shady places, and in pastures.

87. BOTRYCHIUM VIRGINIANUM Swartz.

Rattlesnake Fern.

Found in Beverly, and also in Georgetown (Mrs. Horner). This beautiful and delicate fern is the largest of all the Botrychiums and is found from Canada to the tropics. Not rare, yet (owing to its never spreading except by spores) it is seldom found abundant except as a number of specimens scattered through the woods. In this the fertile spike is on the same stalk with the sterile frond, all the limbs springing from a common centre much above the ground. There are one or two of the small species of Botrychium which possibly may be found in the county.

FERNS THAT POSSIBLY MAY YET BE FOUND GROWING NATURALLY IN ESSEX COUNTY, MASS.

1. WOODWARDIA ANGUSTIFOLIA Smith. Now found in Hingham and Dedham.

2. PHEGOPTERIS HEXAGONOPTERA Fée. Found in Portland, Brattleboro and South.

3. ASPIDIUM CRISTATUM *var.* CLINTONIANUM D. C. Eaton. Found in Vermont and New Hampshire.

4. **Aspidium Goldianum** Hook. Found in New Hampshire, Vermont and Connecticut.

5. **Botrychium simplex** Hitch. Found on Long Island, Deerfield, Mass, etc.

6. **Botrychium matricariæfolium** A. Br. Found in New Hampshire, New York, Dedham, Mass.

7. **Botrychium lanceolatum** Angström. Found in Sudbury, Mass., etc.

LYCOPODS FOUND IN ESSEX COUNTY.

Lycopodium lucidulum Michx. Essex, Peabody, Georgetown.

L. **inundatum** L. Beverly, Beaver pond; Chebacco pond.

L. **annotinum** L. Chebacco woods (1872, J. R.); probably the locality of this rare species was known to Wm. Oakes about 1840.

L. **dendroideum** Mx. also *var.* **obscurum**. Common in almost every town.

L. **clavatum** L. Common North Andover, Georgetown, Essex, Beverly, etc.

L. **complanatum** L. Very common, including a variety.

Selaginella apus Spring. West Boxford and Georgetown, abundant (Mrs. Horner).

S. **rupestris** Spring. Common on rocky, bare hills.

HYDROPTERIDES.

Marsilia quadrifolia L. Has become fully established in a little pond by Leggs Hill, where it was planted years ago by Mr. Russell (S. B. Buttrick).

EQUISETACEÆ.

Equisetum arvense L. Common everywhere.

E. **sylvaticum** L. Not rare in the woods.

E. **limosum** L. Wenham, Topsfield, etc.

E. **hyemale** L. Danvers (J. H. Sears.)

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Regular Meeting, Monday, March 1, 1875.

Meeting this evening at 7.30 o'clock. Vice President F. W. Putnam in the chair. Records of preceding meeting read.

The **Secretary** announced the following correspondence:—

From Mary J. Safford Blake, Boston, Feb. 20; John M. Bradbury, Ipswich, Feb. 24; J. Colburn, Boston, Feb. 20; C. F. Crocker, Lawrence, Feb. 17: S. G. Drake, Boston, Feb. 25; S. A. Green, Boston, Feb. 27; Frederick A. Lucas, Rochester, N. Y., Feb. 28; Alfred Osgood, Newburyport, Feb. 24; Nathaniel Paine, Worcester, Feb. 19; A. A. Scott, Saugus, Feb. 18; Boston Public Library, Feb. 25; Buffalo Historical Society, Feb. 25; Portland Institute, Feb. 18; Worcester Lyceum and Natural History Association, Feb. 24.

The **Librarian** reported the following additions to the library:—

By Donation.

Bolles, E. C. Sunday School Helper, 63 numbers. Christian Leader, 12 numbers. Sunday School Journal, 5 numbers. Sunday School Teacher, 3 numbers. Miscellaneous pamphlets, 27.

Brooks, H. M. Woman's Journal, Apr., June, July, Aug., Oct., Nov., Dec., 1874.

City of Boston. City Documents, 1874. 3 vols. 8vo.

Cutter, A. E., of Charlestown, Mass. Ninth Annual Report of the Winchester Home Corporation for Aged Women, Jan., 1875. 8vo pamph.

Foote, H. W., of Boston, Mass. Sermon preached at King's Chapel, Sunday, Jan. 3, 1875. 8vo pamph.

Green, S. A., of Boston, Mass. Miscellaneous pamphlets, 70.

Lee, John C. Commercial Bulletin, Feb. 13, 20, 27, 1875.

Mass. Charitable Mechanic Association. Twelfth Exhibition of the, Sept. Oct., 1874. 8vo pamph.

By Exchange.

American Philosophical Society. Proceedings of. Vol. xiv. June-Dec. No. 93. 1874.

New England Historic-Genealogical Society. Proceedings of the, Jan. 6, 1875. 8vo pamph.

Wisconsin Academy. Transactions of the. Vol. ii, 1873-4.

Publishers. Forest and Stream. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Post.

After remarks by the chair in relation to the very interesting photographs of ancient stone houses on the cliffs of the Mancos Valley, which had been taken by Messrs. Jackson and Ingersoll, of the Hayden Expedition, it was

Voted, To invite Mr. **Ernest Ingersoll**, of the Hayden Expedition, to give an illustrated lecture on the recent archæological discoveries of the expedition.

Mr. **Putnam** then called Dr. G. A. **Perkins** to the chair, and occupied the evening by giving an account of the fortifications, and other enclosures, made by the Indians and the older races in North America. First, calling attention to the fortifications which, from historical evidence, were known to have been made and occupied by the different Indian tribes at the early period of the settlement of North America by the white race, he described their characteristic structure, which, generally, was that of low earth embankments, with, or without, an outside ditch, and these embankments were generally surmounted by palisades. In other instances the walls were of stone in the place of earth, and in many forts palisades were used without additional defence. He then described those which, for several reasons, were considered as having been erected by the mound builders. These were, so far as yet known, confined to the great Mississippi valley, the Ohio valley, and the southern and southwestern parts of the country. These structures are far more imposing than those made by the Indians, and are built with more regard to permanence. Many are so situated as to have formed almost impregnable positions, and we cannot but believe that their defenders must have maintained them for years, until finally they were forced, by continued battles and probably from lack of subsistence, to migrate farther to the southwest, or were so reduced by starvation as to become exterminated.

Many interesting comparisons were made between the fortifications in different parts of the country, and also those of South America, the Pacific Islands and the ancient parts of the old world, showing that in all lands, and during nearly all time, there had been a continued system of warfare and extermination of races.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., APRIL, 1875. NO. 4.

One Dollar a Year in Advance. Ten Cents a Single Copy.

CATALOGUE OF THE FIRST ART EXHIBITION, MARCH, 1875.

No.		*Contributor.*	*Artist.*
1	Marriage of St. Catherine.*	Mary E. Williams.	Antonio Balestra.
2	View from Taormina in Sicily, looking towards Messina.*	"	A. O. Williams.
3	Copy of St. Margaret dispelling the Dragon with the Cross in the Church of San Pietro in Vincoli at Rome, by Guercino.*	"	Mary E. Williams.
4	Copy of the Madonna Enthroned, by Pinturicchio, at Perugia.*	"	Mary E. Williams.
5	Copy of the Marriage of St. Catherine by Murillo in the Vatican Gallery.*	"	Mary E. Williams.
6	View of Ischia from Capri.*	"	A. O. Williams.
7	Erithrean Sibyl.*	"	Mary E. Williams.
8	View on the Road to Vallombrosa.*	"	A. O. Williams.
9	Lake Como from San Giovanni.*	"	A. O. Williams.
10	Lake Maggiore from Baveno.*	"	A. O. Williams.
11	Lake Como from Bellagio.*	"	A. O. Williams.
12	Study of Capuchin Monks.*	"	Mary E. Williams.
13	Sans Souci.*	"	Mary E. Williams.
14	View of Sorrento and Bay of Naples.*	"	A. O. Williams.
15	Un Bajocco per Carità.*	"	Mary E. Williams.
16	A Roman Maiden.	"	Mary E. Williams.
17	Heidelberg Castle and Town.*	"	A. O. Williams.
18	Cloister Life in the Olden Time.*	"	Mary E. Williams.
19	The Roman Forum at Sunset; view from the Capitol.*	"	Moretti.
20	Copy of some Angels in the Coronation of the Virgin, by Raphael, in the Vatican.*	"	Mary E. Williams.
21	View of Mount Ætna from Taormina.*	"	A. O. Williams.
22	Roman Beggar.*	"	Mary E. Williams.
23	View of Tivoli and its Falls.*	"	A. O. Williams.
24	Study of an Arab, from life.*	"	Mary E. Williams.
25	Roman Peasant Girl.*	"	Mary E. Williams.

No.		*Contributor.*	*Artist.*
26	Tomb of Cecilia Metella and the Via Appia looking towards Rome.*	Mary E. Williams.	A. O. Williams.
27	Study of an Arab's Head, from life.*	“	Mary E. Williams.
28	Little Wild Flower.*	“	Mary E. Williams.
29	Bay of Salerno; view on the road to Amalfi.*	“	A. O. Williams.
30	Palermo.*	“	A. O. Williams.
31	American Autumn.*	“	A. O. Williams.
32	Old Joanna.*	“	Mary E. Williams.
33	The Alchemist.*	“	Mary E. Williams.
34	The Tenants of our Kitchen.*	“	Mary E. Williams.
35	Italian Kitchen.*	“	Mary E. Williams.
36	Angel of the Annunciation; copied from Pinturicchio.	“	Mary E. Williams.
37	Madonna; copied from Pinturicchio.	“	Mary E. Williams.
38	Papyrus growing on the River Anapo in Sicily.*	“	A. O. Williams.
39	Saracenic Tombs at Taormina.	“	A. O. Williams.
40	Stella, Roman Costume.*	“	Mary E. Williams.
41	Roman Peasant.*	“	Mary E. Williams.
42	Pifferaro.*	“	Mary E. Williams.
43	Capuchin Monk.*	“	Mary E. Williams.
44	Star Grass.	“	Mary E. Williams.
45	Fringed Gentian.	“	Mary E. Williams.
46	Mallows.	“	Mary E. Williams.
47	Lady's Slipper.	“	Mary E. Williams.
48	Mountain Laurel.	“	Mary E. Williams.
49	Lysimachia and Lobelia.	“	Mary E. Williams.
50	Harebell.	“	Mary E. Williams.
51	Painted Cup.	“	Mary E. Williams.
52	Cardinal Flower.	“	Mary E. Williams.
53	Closed Gentian.	“	Mary E. Williams.
54	Gay Feather and Burnett.	“	Mary E. Williams.
55	Nodding Lily.	“	Mary E. Williams.
56	Meadow Lily.	“	Mary E. Williams.
57	A Copy by Farrar, from a Water Color Sketch by Jno. W. Turner.*	G. L. Chandler.	
58	A view on the Androscoggin River in Bethel, Me., a sketch in oils by Butman.*	“	F. W. Butman.
59	Crayon drawing from a cast of an antique head.	“	G. L. Chandler.
60	Millbrook Falls—Thornton, N. H.—pencil sketch.	“	G. L. Chandler.
61	Water color drawing; Lake Winnipisauke.*	“	Wheelock.
62	Landscape.*		S. L. Gerry.
63	Landscape.*		W. A. Gay.
64	Photograph from a portrait.*	“	W. M. Hunt.
65	Etching, by Vandyke; portrait of Paul Pontius.	“	Vandyck.
66	Photograph from a portrait of the Duke d'Olivares.	“	Velasquez.
67	Paul preaching at Athens; engraving by Dorigny, after Raphael.	“	Raphael.
68	Landscape.*		R. H. Fuller.
69	The Transfiguration; engraved by Dorigny after Raphael.*	“	Raphael.
70	Landscape; engraved by Woolett, after Claude.*		Claude.
71	Engraving; “Comfort the Fatherless and the Widow,” from a design by Flaxman.	“	Flaxman.
72	Landscape; Livermore Falls, Plymouth, N. H.*	“	G. L. Brown.
73	Landscape; Medford Salt Marshes.*		G. L. Brown.

No.		*Contributor.*	*Artist.*
74	Four photographs; Landscapes from Turner's Liber Studiorum.	G. L. Chandler.	Ira W. Turner.
75	Crevasse on the Mer de Glace; Chromo-lithograph.	"	G. L. Chandler.
76	Head of Daniel Webster; a photograph from a relievo in marble, life size.	"	
77	The Prophet Zachariah; carbon photograph, from the fresco by M. Angelo.	"	
78	Italian Shepherd.*	Mr. Newcomb.	George Newcomb.
79	View in Conway, N. H., near Artists' Mill.*	"	George Newcomb.
80	Kiarsarge Brook, Conway.*	"	George Newcomb.
81	Artists' Brook, Conway.*	"	George Newcomb.
82	Moonrise and Sunset, White Head Harbor, Portland.	E. S. Morse.	H. B. Brown.
83	Out-door Sketch, Campton, N. H.	"	H. B. Brown.
84	Palette Knife Sketch.	"	H. B. Brown.
85	American Bittern; Pastel from Still Life.	Mrs. Osgood.	Mrs. G. P. Osgood.
86	Woodcock from Still Life.	"	Mrs. G. P. Osgood.
87	Water Color, Autumn Leaf and Maidenhair.		Miss L. H.Cleveland
88	Water Color, Autumn Leaves.		Miss L. H.Cleveland
89	Lake Lucerne.		Helen Philbrick.
90	Autumn Scene.		Helen Philbrick.
91	Water Color.		Eliza Philbrick.
92	Sketch in Oil.	Chas. T. Jenkins.	G.W.Alston Jenkins
93	Clytie, Charcoal.	Miss Caller.	Miss Ida Caller.
94	Copy from Photograph, Charcoal.	"	Miss Ida Caller.
95	Head—original.	"	Miss Ida Caller.
96	Child's Head, Charcoal.	"	Miss Ida Caller.
97	Eastern Beauty, Charcoal.	"	Miss Ida Caller.
98	Fruit Piece.	Mrs. Metcalf.	Mrs. E. S. Metcalf.
99	Lamb bound for Slaughter.	"	Mrs. E. S. Metcalf.
100	Italian Doves.	"	Mrs. E. S. Metcalf.
101	La Cucitrice.	"	Mrs. E. S. Metcalf.
102	Landscape.	Mrs. J. S. Cabot.	Gifford.
103	Portrait of Danish Prince, Copy.	"	Miss M. E. Williams
104	Grapes.	"	Mrs. R. H. Lathrop.
105	Table Top.	Mrs. Kemble.	Mrs. E. T. Kemble.
106	Table Top.	"	Mrs. E. T. Kemble.
107	Table Top.	"	Mrs. E. T. Kemble.
108	Tile.	"	Mrs. E. T. Kemble.
109	Tile.	"	Mrs. E. T. Kemble.
110	Derby Mansion.	E. S. Morse.	E. S. Morse.
111	The Lookout.	"	E. S. Morse.
112	Norman's Woe near Gloucester, Mass. Scene of the Wreck of the Hesperus.*	Mrs. Kindler.	Mrs. A. M. Kindler.
113	Study of Cattle.*	"	Mrs. A. M. Kindler.
114	Eastern Point.	"	Mrs. A. M. Kindler.
115	Marine View.*	"	Mrs. A. M. Kindler.
116	Full Military Record of Gen. U. S. Grant executed on the Principle of Reynold's Escutcheon of Military Service.	J. P. Reynolds.	R. L. Brown.
117	Military Record.	"	R. L. Brown.
118	Military Record.	"	R. L. Brown.
119	Shadow Dance.	Miss Caller.	Miss Ida Caller.
120	Terrier.	"	Miss Alice Caller.
121	Pen and Ink Composition.	George Flint.	George M. White.
122	Peace.	John Robinson.	
123	Pond Lilies.	"	Miss Mary A. Clark.
124	House Seven Gables.	"	George M. White.

No.		*Contributor.*	*Artist.*
125	Copy of Portrait of Raphael (purchased at Florence).	A. J. Archer.	
126	Castle of St. Angelo.	Elijah W. Upton.	Abel Nichols.
127	Fancy Head.	“	Joseph Ames.
128	Landscape, Head Waters of the Saco River.	“	Champney.
129	Off Cape Race.	W. D. Northend.	S. G. W. Benjamin.
130	Fairy Tales.	“	Miss H. F. Osborne.
131	Dominican Nun.	“	T. T. Spear.
132	Sherwood Oaks; English Water Color Chromo.	John Robinson.	
133	Bridge at Bassée.	N. Ropes.	Dufresne.
134	John Brown.	A. G. Browne.	T. S. Noble.
135	Crayon from Model.	Mr. Whitney.	Charles F. Whitney.
136	The Winnower.	Miss Johnson.	Miss Kate Johnson.
137	Fuchsia on Rice Paper.	Miss M. E. Briggs.	Miss Kate Johnson.
138	Painted Cup.	Miss Johnson.	Miss Kate Johnson.
139	Wistaria.	“	Miss Kate Johnson.
140	Sketch.	M. G. Wheatland.	Gay.
141	Water Color.	“	L. E. Merrill.
142	Water Color.	“	Rebecca Munroe.
143	View on the Hudson.	“	Miss Forrester.
144	Portland Harbor from Cushing's Island.	“	Miss E. Gardner.
145	Motto in Water Colors.	Mr. Dodge.	William B. Dodge.
146	Violets.	Miss Johnson.	Miss Kate Johnson.
147	Water Color.	Miss Quimby.	Miss A. M. Quimby.
148	Charcoal Sketch near Readville.	Miss Smith.	Miss S. E. Smith.
149	Copy from an Oil Painting.	“	Miss S. E. Smith.
150	The Monk, after Hunt.	“	Miss S. E. Smith.
151	Pine Grove, Blue Hill.	“	Miss S. E. Smith.
152	Copy of Head by Hunt.	“	Miss S. E. Smith.
153	Italian Boy.		Miss S. E. Smith.
154	Oak Bluff, Water Color.	Miss Kimball.	Miss S. S. Kimball.
155	Bird and Nest.	“	Miss S. S. Kimball.
156	Medallion; Europe; photograph.	Geo. R. Chapman.	
157	Medallion; Asia; photograph.	“	
158	Medallion; Africa; photograph.	“	
159	Medallion; America; photograph.	“	
160	Sunset.	E. S. Atwood.	Loemons.
161	The Mountain Brook.	“	
162	Cape Elizabeth.	Mrs. F. H. Lee.	Miss M. T. Hersey.
163	Lucrece.	O. P. Lord.	Goodman.
164	Artists' Reunion.	“	Hamman.
165	Socrates instructing Alcibiades.	“	Schopin.
166	Lily, charcoal copy.	Miss Peirson.	Pupil of S. E. Smith.
167	Hand from a cast.	“	“ S. E. Smith.
168	Grapes from cast.	Miss Osgood.	“ Miss Williams.
169	Japan Lily, Charcoal.	Miss Smith.	Miss S. E. Smith.
170	Currants.	T. F. Hunt.	George M. White.
171	Autumu.	“	George M. White.
172	Early Morning at Sea.	“	S. G. W. Benjamin.
173	Path in the Woods.	“	J. J. Enneking.
174	Fruit.	“	Italian.
175	Gorge near Stowe, Vt.	“	George M. White.
176	Wild Cattle, Engraving.	W. D. Northend.	Landseer.
177	Panel; Apple Blossom.	Miss Caller.	Miss Alice Caller.
178	Panel; Lilac.	“	Miss A. Caller.
179	Panel; Wild Rose.	“	Miss A. Caller.
180	Panel; Violets.	“	Miss A. Caller.
181	Panel; Golden Rod.	“	Miss A. Caller.
182	Blue Gentian, Water Color.	Miss H. Putnam.	Miss H. G. Carlton.
183	Thistle Piece,* “ “	Miss Grant.	Miss C. L. Grant.
184	Table Top. Pen and Ink.	Mrs. Davis.	Mrs. H. H. Davis.
185	Panel.	Mrs. G. Z. Silsbee.	Miss Silsbee.
186	Panel.	“	Miss Silsbee.

No.		*Contributor.*	*Artist.*
187	Nath'l Hawthorne at age of 36.	R. C. Manning.	Charles Osgood.
188	Portrait.	"	E. L. Custer.
189	Afternoon on L. Wallansee, Switzer'd.	"	E. L. Custer.
190	Cascade, Franconia.	"	S. P. Hodgdon.
191	Fruit.	"	
192	Study, Landscape.	"	E. L. Custer.
193	Horse, Pencil Drawing.		Benj. Henderson.
194	Portland Light.	E. C. Bolles.	H. B. Browne.
195	Flower Piece.		A. E. Whitmore.
196	Flower Piece.		A. E. Whitmore.
197	Sketch in Conway.	C. H. Weston.	George Newcomb.
198	A Study.	Miss K. Brooks.	Miss Kitty Brooks.
199	View in South Salem.	Miss K. Pierson.	Miss C. C. Lawrence.
200	Seven Pen Sketches.	Miss Saltonstall.	
201	Portrait. painted 1790.	Gardner Barton.	
202	Head of a Horse, after Landseer.	Mrs. Merritt.	Mrs. E. S. Merritt.
203	Roman Boy (copy after W. M. Hunt).	Miss Smith.	Miss S. E. Smith.
204	Italian Boy, a study from life.	"	Miss S. E. Smith.
205	Motto, Water Color.	"	Miss Dunning.
206	Baby (copy after W. M. Hunt).	"	Miss Smith.
207	Rainbow Creek, Florida (copy after Hunt).	"	Miss S. E. Smith.
208	Pansies.	"	Miss S. E. Smith.
209	Red Rose.		Miss S. E. Smith.
210	Flower Panel.		Miss S. E. Smith.
211	Flower Panel.		Miss S. E. Smith.
212	Flower Panel.		Miss S. E. Smith.
213	Flower Panel.		Miss S. E. Smith.
214	Fruit.		S. E. C. Oliver.
215	Ship Rock.	C. Cooke.	George M. White.
216	Study.	"	George M. White.
217	White Mountains.	J. A. Gillis.	Gerry.
218	Winter Landscape.	Miss H. H. Silsbee.	Miss E. Gardner.
219	Engraving, Sistine Madonna.	B. H. Silsbee.	
220	Engraving, The descent from the Cross.	"	
221	Engraving, St. Michael slaying the Dragon.	"	
222	Engraving. Christ bearing the Cross.	"	
223	Valley of the Pemigewasset.	"	S. L. Gerry.
224	Copy of Madonna by Murillo.	"	
225	Engraving, Marriage of St. Catherine.	"	
226	Ferns, etc.		Lucy E. Merrill.
227	Water Color, Cat o' Nine Tail.		Helen F. Ayres.
228	Pink Spiræa, Hardhack.		Helen F. Ayres.
229	Water Color, Flower piece.		Ellen Robbins.
230	Flower Piece.		Ellen Robbins.
231	Convolvulus.		Ellen Robbins.
232	Gladioli.		Ellen Robbins.
233	Winter Scene.		M. Macpherson.
234	Landscape.		M. Macpherson.
235	Loon.		M. Macpherson.
236	Echo Lake.		J. W. Averill.
237	Group of Cattle.		J. W. Averill.
238	Fruit Piece.	I. Fellows.	Miss S. E. Fellows.
239	Landscape.*	Miss Perkins.	Miss Annie Perkins.
240	Water Color.*	"	Miss Annie Perkins.
241	Water Color.	I. Fellows.	Miss S. E. Fellows.
242	Ezekiel.	Mrs. Nourse.	
243	Joel.	"	
244	Spanish Lady.	"	
245	Panel in Oil.	E. W. Upton.	Miss J. A. Stetson.
246	Shylock and Jessica.	"	Ames.
247	Feeding Chickens.		Miss H. F. Osborne.
248	Panel, Pansies.		Miss H. F. Osborne.

No.		***Contributor.***	***Artist.***
249	Poet's Dream.	C. A. Ropes.	Alex. Vion.
250	Canadian Winter.	“	Creighoff.
251	Kitchen and chicken.	“	Couterier.
252	Dessert.	“	X. L. Marsh.
253	The Dumb Donkey.	“	Lalaisse.
254	The First Ride.	“	Lalaisse.
255	Madonna.	“	Shraeder.
256	The Transfiguration.	“	S. B. Waugh.
257	Resignation.	“	Unknown.
258	Eastern Point.	“	Lane.
259	English Inn.	“	D. F. Notermay.
260	Barn Yard.	“	
261	Sir Galahad's Guest, from Tennyson's “Holy Grail.”	Miss Osborne.	Miss H. F. Osborne.
262	Portrait of Daniel Webster, a relievo in marble.*	Mr. Chandler.	G. L. Chandler.
263	Portrait of Washington.	Mr. Southward.	George Southward.
264	Marine View.	“	George Southward.
265	George Washington.	E. W. Upton.	J. Ames.
266	Fruit Piece.	Miss Pratt.	Miss Pratt.
267	Fruit Piece.	“	Miss Pratt.
268	Rev. Dr. Cutler's Barn, Hamilton, Ms.	F. Lamson.	H. S. Fiske.
269	View Belknap, N. H.	“	H. S. Fiske.
270	Lamson's Bridge, Topsfield.	“	C. C. Marcy.
271	Cymbeline, Water Color.	W. H. Foster.	H. L. Burchmore.
272	Interior.	“	Unknown.
273	Interior.	“	Unknown.
274	Fruit Piece.	Miss Saltonstall.	John Sutton.
275	Lynnfield Pond.	“	R. D. Wilkie.
276	Copy and Design, Breast-plate and War Mantle. Minerva.	Miss Carlton.	Miss H. E. Carlton.
277	Flowers from Nature.	D. B. Hagar.	Miss H. E. Carlton.
278	Table Top, Roman Mosaic.	Mrs. J. O. Safford.	
279	Fancy Carved Ink Stand.	Willie Safford.	
280	Marine View.	Mrs. John N. Mott.	Dr. Ruggles.
281	Roses.	“	Miss Sindborg.
282	Venice, Moonlight.	“	
283	Venice, Moonlight.	“	
284	Water Fall.	Mrs. G. H. Wood.	Griggs.
285	Early Autumn.*	Mrs. Kindler.	Mrs. Kindler.
286	A Sibyl; copy from Guercino.	Mrs. J. H. Silsbee.	
287	Rabbits, copy.	Miss Grant.	Miss Lydia Grant.
288	Lion, copy, charcoal.	Miss Pickering.	Miss Pickering.
289	Azalia and Vase.	“	Miss Pickering.
290	Cupid from Cast, charcoal.	Miss Brown.	Miss Alice Brown.
291	Winter Scene, copy.	Miss Nichols.	C. F. A. Nichols.
292	Flowers, copy.	“	C. F. A. Nichols.
293	Spools, from object.	Miss Oliver.	Miss Lizzie Oliver.
294	Venetian Scene.	J. M. Caller.	Defaux.
295	Church and Piazza of St. Peter's at Rome.	Miss Williams.	Moretti.
296	View on the Tiber near Rome.	Geo. R. Emmerton.	J. M. Emmerton.
297	Monastery in Gottenberg.	J. M. Caller.	Defaux.
298	Artist's Brook, North Conway.	Daniel Low.	George Newcomb.
299	Panel.	Mrs. F. C. Butman.	Miss Butman.
300	Apple Blossom.	“	Miss Butman.
301	Original painting of Cleopatra, by Guido.	Miss E. Gardner.	Guido.
302	Terrier Study.	Miss Agge.	Miss A. Agge.
303	Abd El Kadir, from Bronze.	“	Miss Agge.
304	Contentment, water color.	Miss Brown.	C. P. Brown.
305	The Little Foxes.	W. D. Northend.	Carter.
306	Autumn Leaves.	Miss Allen.	Miss Allen.
307	Naugus Head.	Prof. A. S. Packard	Mrs. Hyatt.
308	Portraits.	J Peirce.	Charles Osgood.
309	Water Color.		Miss A. M. Quimby.

No.		*Contributor.*	*Artist.*
310	Photograph of bust of Wendell Phillips.	A. G. Brown.	
311	Water color, Roses.		Pupil of S. E. Smith.
312	Painting, Rose.		Pupil of S. E. Smith.
313	Sepia Tree Study.		Pupil of S. E. Smith.
314	Head of an Armenian Priest.		Miss M. E. Williams.
315	Head of a Pilgrim.		Miss M. E. Williams.
316	Copy of picture in Boston Athenæum.		Miss M. E. Williams.
317	Picture wrought on silk with chenille and floss.	Mrs. F. C. Butman.	Lucy Ropes, 1819.
318	Glace Portraits.		J.W. & J. S. Moulton.
319	Albumen Portraits.		J.W. & J. S. Moulton.
320	Albumen Portraits.		J.W. & J. S. Moulton.
321	Spring Flowers.	Mrs. E. Putnam.	Miss E. Gardner.
322	Portrait.	Alfred Peabody.	Mrs. Wayland Hoyt.
323	Portrait.	"	Mrs. Wayland Hoyt.
324	Intervale at North Conway.	Miss Gardner.	Miss E. Gardner.
325	Winter's Farewell. This is for sale for the benefit of the Salem Hospital.*	"	Miss E. Gardner.
326	Island of Pico.	A. H. Johnson.	G. W. S. Benjamin.
327	English Channel.	"	G. W. S. Benjamin.
328	Apple Blossoms.	J. M. Caller.	Miss Alice Caller.
329	Roses.	"	Miss Alice Caller.
330	Charcoal Sketches.	"	Miss Ida Caller.
331	Prayer in the Desert.	C. A. Ropes.	Pupil of Vernet.
332	Portrait, Cromwell.	A. G. Brown.	
333	Landscape.	C. H. Higbee.	E. Burrill, jr.
334	Flowers.	Miss Gardner.	Mrs. Gardner.
335	Cattle.	W. P. Upham.	O. W. H. Upham.
336	Landscape.	Geo. Newcomb.	Geo. Newcomb.
337	Water Color.	Miss M. Allen.	Miss M. Allen.
338	Landscape.	H. Kilburn.	H. Kilburn.
339	Landscape.	"	H. Kilburn.
340	M. Angelo; engraving.	C. H. Higbee.	

Pictures marked thus* were for sale. The exhibition was continued from Thursday, March 11, to Friday evening, March 19.

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Regular Meeting, Monday, March 22, 1875.

Meeting this evening at 7.30 o'clock. The President in the chair. Records of preceding meeting read.

Mr. J. H. Stevens delivered an interesting lecture upon a subject with which he has become pretty thoroughly acquainted by long and patient study.

He commenced by stating that he should treat experimentally the applications of galvanic electricity to a few of the arts of every day life. Electricity, he said, is one of the more newly developed of the wonderful and beautiful forces that nature offers with a lavish hand, and in this great awakening on scientific subjects, the efforts to invade the penetralia of her domain have been amply rewarded by the glorious revelations she has vouchsafed of the operations carried on in the mysterious depths of her aerial and subterranean laboratories.

Electricity, though long known, has always been, and is now, very imperfectly understood. It is true it can be liberated from its elemental prison house, measured and sent laden with intelligence to the uttermost parts of the earth in a moment of time, but should the question be raised, "What is electricity?" the lecturer said that he for one should have to say, he did not know. It is simply known that it is one of the most powerful of the natural forces, but the intensity which can carry it, upon a free conductor, entirely around the circumference of the earth four times in one second is utterly beyond comprehension.

It is customary to speak of it as a fluid, and talk of a current of electricity flowing through a wire. But that cannot be, for certainly a fluid and a solid cannot occupy the same space at the same time. However, that is a convenient way of speaking, and to call it a current also hides our ignorance on the subject. As one of the natural forces it is of very vital importance in every day life. It pervades all things. The air we breathe is vitalized by its presence. The food we eat is rendered palatable and nutritious by its power. It attends the rising and the setting of the sun, and the midday solar heat causes a surging of vast electric and magnetic forces, which exert a powerful influence in the great economy of nature.

The methods of developing electricity in considerable quantities for practical use are abundant. As the time for experiments was necessarily short, the lecturer proceeded at once with them. He took, at first, one of the simplest methods of developing a galvanic current. He said this is done most effectually by subjecting to an acid solution two metals of an entirely opposite nature, one of which shall be most easily oxidized by the acid, and the other not oxidized at all. The easily oxidized or positive metal is commercial zinc; the other or negative metal is pure platinum, the most refractory and valuable of metals to the chemist and the electrician. If the two metals were alike, they would be acted upon equally, thus offering no inducement for a transfer of force from one to the other, and consequently no electrical action.

The lecturer then placed the metals in a glass of water, slightly acidulated with sulphuric acid. The zinc plate was amalgamated with mercury, so that no local action should take place until the condition required for a transfer of the tension or electro motive force from one plate to the other was fulfilled. That condition is to place a metallic connection from one plate to the other, outside of the solution, as a conductor for the current to travel upon. This was done with a piece of copper wire. The current then was flowing rapidly along the wire, from the platinum to the zinc plate. Through the solution it was flowing from the zinc to the platinum. The water was decomposing, the oxygen evolving at the zinc plate and the hydrogen at the platinum. The sulphur attacking the zinc was precipitated in the form of crystallized sulphate of zinc.

The wire conductor may be one inch long or one thousand miles long, and the electric force will be felt equally along its whole length, the strength of battery being equal to the resistance of the wire. Now to utilize this current of electricity for a motive power, it must be converted into magnetism, which is easily done by wrapping insulated copper wire, in many turns, around soft iron of any convenient shape.

One of the many practical uses of the electric current he explained by the use of apparatus which was put up in a circuit about the hall. It represented a circuit of street gas-lights, such as have been in use in Ward Three in this city since last fall, and though the winter has been an unusually severe one, they have proved themselves equal to it, and have worked with perfect success through the severest storms. The apparatus consisted substantially of an electro magnet, an armature, ratchet wheel and pawl. Two wires led from the battery at the central station to the first light in the circuit, and thence to each one in its turn. When a current was sent out on the lighting wire, the magnet was charged, the armature of which actuates the pawl and ratchet wheel, thus opening the cock to let on the gas, at the same time, by an interruption of the current at the tip, lighting the gas. At the expiration of the half second of time which it takes to turn on and light the gas, the current was sent forward, by the action of a cam and spring, to the next light, and so on to the end of the circuit. A reversal of the switch at head quarters sent out a current on the other wire, which by a similar operation turned off the gas at the rate of four burners in one second.

After explaining the apparatus very fully and minutely, in its capacity as a burglar alarm, etc., the lecturer passed on to the consideration of some other branches of electrical science. The subject of ocean telegraphy was taken up and treated as fully as the time would permit, by the use of actual working apparatus and diagrams.

After speaking of the importance of international telegraphic communication, in a political and commercial light, the lecturer introduced some very delicate receiving apparatus, to show the great difference between ocean and land telegraphy. He explained that instead of the noise, glare of light, clicking and bustle of an ordinary telegraph office, the cable office was silent and dark, to enable the watchful operator to detect the slight deflection of the tiny pencil of light which was to impart to him the intelligence which had flashed along under a thousand watery leagues from a distant part of the world. After explaining the reversing key and the different methods of working cables, by reversal and change of potential, the lecturer explained by diagrams some of the methods of locating a fault or a break a hundred or a thousand miles away from the shore, down deep upon the bottom of the ocean; also how a steamer would go almost directly over the spot, find, take up and repair the fault. Several specimens of cables were exhibited.

A very sensitive tangent galvanometer with a small reflector within its coils was arranged to receive a small ray of light coming from a lamp, through a small hole in the side of a box. On the back of the reflector was fastened a very small magnetic needle, which was deflected to the right or left in obedience to the positive or negative current sent through the wire by the reversing key at the sending station. The ray of light from the darkened box falling upon the reflector through a convex lens, was reflected upon a screen at the top of the box.

A positive current through the galvanometer would throw the little spot of light to the right of zero on the screen. A negative current would throw it to the left, thus producing the combination, which to the practised eye formed the letters of the alphabet.

The lecturer then gave an illustration of the very delicate and difficult process of finding a break or fault in the cable in mid-ocean. For instance, a very slight abrasion occurs in the insulation of the conductor at some point in the ocean. It is just sufficient to allow enough of the current to escape to prevent intelligent communication. The test is made by disconnecting both ends of the cable from all apparatus. A test battery and sensitive galvanometer are then applied to one end, and the resistance in OHMS of that portion is obtained, which is the resistance of the conductor to the fault, plus the resistance of the fault itself to the earth. Then the same process is repeated from the other end.

The resistance of the fault itself must be eliminated from both tests, and as it will be the same in both cases, the process will be as follows:

To the known resistance of the whole cable add the obtained resistance of one test, deduct from that the obtained resistance of the other test, divide that result by two and you have the resistance of the conductor in the first test from the office to the fault, in OHMS, which is easily reduced to miles and fractions of a mile.

The chart then gives its locality in the ocean. A steamer then goes as near to the spot as possible and drags for the cable until it is fished up. By cutting the cable it is easily ascertained which side of the steamer the fault lies.

The cable is then picked up by machinery and passed along across the deck as the steamer proceeds. By passing it through a tank of water connected by very delicate test apparatus to the sea, the fault announces itself the moment it reaches the tank of water on deck. It is then cut out. Communication is established with both sides of the ocean, the cable is joined, the insulation is completed, and it is dropped down into its bed of infusoria, to throb again with those mysterious international impulses.

The finding of a break in the cable is similar in some respects, he said, to the process just described.

The lecturer then explained by diagrams the duplex or double transmission system, where two messages are sent at the same time in opposite directions upon the same wire without interference.

The lecture was closed by a series of brilliant experiments in electro-magnetism, the electric light, the deflagration of metals by the electric current, and the explosion of electric torpedoes.

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Regular Meeting, Monday, April 5, 1875.

Meeting this evening at 7.30 o'clock. The President in the chair. Records of preceding meeting read.

The Secretary announced the following correspondence:—

From George H. Allen, Boston, March 2, 22; Samuel L. Boardman, Augusta, Me., March 17; John M. Bradbury, Ipswich, March 1; Waldo Higginson, Boston, March 2; Frank M. Caryl, Franklin, N. J., March 22; A. P. Mayer, Hoboken, N. J., March 1; George B. Gavett, Boston, March 10; Rufus King, New York, March 24; C. F. Maynard, Newtonville, March 5; Thomas E. Proctor, Boston, March 4; R. Ridgway, Washington, D. C., March 21, 29; Smith & Co., Woburn, April 1; Bristol Naturalist Society, Feb. 28; Liverpool Literary and Philosophical Society, Jan. ; Rhode Island Historical Society, March 9; Buffalo Historical Society, March 24; Iowa State Historical Society, March 30; Maryland Historical Society, March 26; New York Historical Society, March 26; Wein, K. Akademie der Wissenschaften, Mun 9, 16; Worcester, Public Library, March 24.

The Librarian reported the following additions to the library:—

By Donation.

Kelley, James H. Essex Register for 1828, 1829. 1 vol. folio.

Mackenzie, S. S., of Topsfield. Miscellaneous pamphlets, 15.

Mass. Horticultural Society. Transactions of. 1874, pt ii.

Mercantile Library Association of San Francisco. Twenty-Second Annual Report. 1874.

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Fifty-Second Annual Report.

Report in reference to the Canal to con-
with the City of Baltimore, by Col. J. J.
Report upon Invertebrate Fossils collected
by C. A. White. 8vo. 1874. Progress Re-
logical Explorations and Surveys west of the

Miscellaneous pamphlets, 25.
1 vol. 4to. Scientific American, 1862. 2 vols.
Poetry. 1 vol. 8vo. Life of A. Lincoln in German.
Magazine. 4 vols. 8vo. Harmer's Observations. 4 vols.
1757. 1 vol. 8vo. Greek and English Dictionary. 1 vol.
4 vols. 8vo. Antiquities of Rome. 1 vol. 8vo. The
History. 1 vol. 8vo. American Atlas. 1 vol. folio. Log Books, 4. Mis-
pamphlets, 150.

U. S. NAVAL OBSERVATORY. Washington Astronomical and Meteorological
Observations 1873. 1 vol. 4to.

U. S. PATENT OFFICE. Official Gazette, Jan. 26, Feb. 2, 9, March 9, 16, 1875.

WYMAN, CYRUS, of Cambridge, Mass. Buxton Centennial, 1772–1872. By J.
M. Marshall. 1 vol. 8vo.

By Exchange.

ST. LOUIS ACADEMY OF SCIENCE. Transactions. Vol. iii. No. ii. 8vo. 1875.

AMERICAN GEOGRAPHICAL SOCIETY. Journal. Vol. iv, 1873. 1 vol. 8vo.

BRISTOL NATURALIST SOCIETY. Proceedings of. Vol. i, pt. 1. New Series. 1874. 8vo.

GEOLOGICAL SURVEY OF CANADA. Report of Progress for 1873–4. 8vo.

N. E. HISTORIC-GENEALOGICAL SOCIETY. Register for April, 1875.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record. April, 1875.

PEABODY INSTITUTE, Peabody, Mass. Twenty-Second Annual Report of the Trustees.

PHILA. ACADEMY OF NATURAL SCIENCES. Proceedings. Pt. iii, Oct., Nov., Dec., 1874.

PUBLISHERS. American Journal of Education. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post.

Among the donations announced were a collection of glass ware made at the works of, and donated by, the Boston and Sandwich Glass Company, through Mr. John C. Lee, of Salem, illustrative of glass manufacture.

Horace Brown, Oliver D. Way and Daniel C. Manning, of Salem, and George W. Grader, of Marblehead, were elected resident members.

C. Bolles presented to the Institute about o examples of East Indian and Japanese paper, rmer obtained in London through the kindness of . C. Cooke, Esq., and the latter derived from exchange with the Agricultural Department at Washington. After speaking of the ancient paper made by expanding sections of the cellular tissues of plants, as the papyrus of the Egyptians and the rice paper of the Chinese, Mr. Bolles called attention to the fact that the Japanese paper exhibited to the Institute was made from the bark of the Paper Mulberry (*Broussonetia papyrifera*),the same substance which, beaten out without pulping, forms the Tappa cloth of the Sandwich Islanders. One remarkable thing about the series of paper presented was its range of texture and weight; as the examples exhibited the most delicate and beautiful tracing paper, the coarsest "board," and most of the intermediate grades. Many specimens, especially those used for book-binding and box-covering, were profusely and artistically ornamented in color. A very fine and gauzy paper was shown as the goldsmiths' substitute for cotton. Perhaps the most curious was the vegetable leather, not to be distinguished in weight, color or flexibility from the best morocco for binders' use. A description of the manufacture of this may be found in the "Journal of the Franklin Institute" for January, 1875.

The East Indian paper was manufactured from a greater variety of substances. Some from Cashmere was from waste silk and examples from Berar from bamboo. A very delicate, highly colored and tough paper was the "kite paper" of Oude. Accompanying this series were the bark of *Broussonetia papyrifera* and *Daphne cannabina*, with the pulps made from both.

It is understood that these series are only in commencement of a cabinet illustrating paper-making of all countries and ages, to which the Institute solicits contributions.

Mr. Bolles, when in England, procured a large number of specimens of vegetable fibres, which have been handsomely mounted, and will be properly arranged for exhibition, in the new department of Technology, which has been organized by the Institute, and which cannot fail to prove both interesting and instructive. He also obtained, through the courtesy of M. C. Cooke, Esq., a variety of models in clay, showing the different classes of workmen engaged in the various processes of paper manufacture as practised in India. Specimens of each were shown to the audience.

Mr. F. W. PUTNAM called attention to the fact that very similar materials (the inner bark of trees, leaves of rushes, etc.), described by Mr. Bolles as used by the ancient races of the East for the manufacture of paper, were also used by the prehistoric races of this country for the purpose of making garments, as proved by the specimens which he had exhibited at a former meeting.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 7. Salem, Mass., May, 1875. No. 5.

One Dollar a Year in Advance. Ten Cents a Single Copy.

SYNONYMY, DESCRIPTION, HISTORY, DISTRIBUTION AND HABITS OF THE PRAIRIE HARE (LEPUS CAMPESTRIS).

By Dr. Elliott Coues, U. S. A.

Synonymy.

Lepus virginianus var.?, Harl., Fn. Amer. 1825, 310 (based entirely on the "Varying Hare of Lewis and Clark," *infra;* description from these authors).

Lepus virginianus ["Harl."], Rich., F. B. A. i, 1829, 224 (Saskatchewan; N. to 55°. Not of Harlan, *op. cit.* 196, which is *L. americanus*).—Maxim., Reise, i, 1839, 508.

Lepus campestris, Bach., J. A. N. S. P. vii, pt. ii, 1837, 349; viii, pt. i, 1839, 80 (in white pelage). Waterh., N. H. Mamm. ii, 1843, 127. Gieb., Säugeth. 1855, 449. Bd., M. N. A. 1857, 585. Newb., P. R. R. Rep. vi, 1857, 63 (upper California and Oregon). Coop. and Suckl., N. H. W. T. 1860, pp. 104, 131 (Columbia to the Missouri). Hayd., Tr. Am. Phil. Soc. xii, 1862, 148 (upper Missouri). Maxim, Arch. f. Naturg. xviii, 1862, ; Verz. N.-A. Säug. 1862, 193. Allen, Bull. Ess. Inst. vi, 1874, pp. 52, 58, 61, 66 (Kansas, Colorado, Wyoming and Utah). Ames, Bull. Minn. Acad. Nat. Sci. 1874, 70 (Minnesota).

Lepus townsendii, Bach., J. A. N. S. P. viii, pt. 1, 1839, 98, pl. 2 (Columbia R., in summer pelage). Towns., Narr. 1839, 325. Aud. and Bach., Q. N. A. i, 1849, 25, pl. 3. Stev., U. S. Geol. Surv. Terr. 1870, 462 (Wyoming).

Varying Hare, Lewis and Clark, ii, 179 (earliest identifiable account). Harl., *op. et l. c.* (Not of authors generally.)

Prairie Hare of the Fur Traders. Rich., *op. et l. c.*

Jackass Rabbit, Vulg., in the regions it inhabits.

Description (from various specimens collected by the writer in July and August, in Montana, lat. 49°).

With the general form of the other large, long-limbed, great-eared hares of the west. Ears, measured from extreme base, decidedly longer than head from nose to occiput. Tail vertebræ about as long as ears from their extreme base — longer than height of ear above its notch. Hind foot rather longer than ears or tail, about twice as long as fore foot from the wrist. Tail with its hairs longer than ear or foot. Width of ear, pressed flat, about one-half its height. Soles and palms densely hairy throughout, the pads reaching to the ends of the nails. Whiskers as long as the head, some black, others white. A few black bristles over the eyes, the lower series constituting true eyelashes. Edges of the eyelids naked. Muzzle completely clothed. Ears softly and closely furry both sides, excepting the deeper portions of the concavity, and with a long thin hairy fringe on the anterior folded over edge. General pelage extremely long, loose and fluffy.

General color of the upper parts pale dull yellowish gray, greatly predominating over a dusky brown with which it is mingled. The bases of the hairs are plumbeous-white, to which succeeds a dusky interval, the yellowish gray furnishing the tip. This predominant tone is pretty uniform, but there is an obscurely darker median dorsal area; while back of the ears, on the sides, hips, buttocks, and in fact all around the general dorsal area, the color lightens, by extinction of the dusky, into a pale plumbeous gray, with a faint yellowish gray tinge. The throat band is of this latter character, and so are the outer surfaces of the limbs for some distance. Toward the extremities, however, the limbs become more decidedly yellowish brown, slightly toned with dusky. The feet-pads are dirty brown, as if soiled by continued contact with the ground. The under side of the head, and, indeed, all the under parts excepting the throat band, are pure cottony white. The tail is pure white, too — a strong character of the species — the dark dorsal area which obtains in its allies being wholly wanting, or merely indicated by a slight plumbeous line, prolonged part way down the top of the tail. The crown of the head agrees with the upper parts in general, but owing to the closeness of the fur, the pattern is finer, and the darker annulations of the hairs gives a heavy ground upon which the yellowish tips of the hairs are more sharply displayed. This darker coronal area is enclosed between light transocular stripes, not well defined, but still showing plainly by contrast. The eyelids themselves are white. The extreme muzzle and the cheeks for a short distance, are light buffy brown, or pale fawn color, well contrasted against the pure white of the chin.

The ears are strongly particolored. The back of the ear is snow-white to within about an inch of the tip, where it is abruptly black. The very edge of the posterior border of the ear is snow white at base, but generally tinged with tawny in the rest of its extent. The broadly folded over anterior border of the ear, and the furriest part of the inside of the ear opposite are like the crown of the head, but the pattern is still finer. The anterior edge of the ear gives a delicate fawn-colored stripe all the way along, supplemented by a pure white fringe of longer hairs. The tip of the ear in front is black like the back, but this black tipping is of less extent than it is behind. The shortest pilous hairs of the concavity of the ear are white, tending to pale fawn color towards the end of the ear. Sometimes that portion of the concavity of the ear which is not covered by the fold of the anterior border shows a quite blackish area, only less conspicuous than the black tip.

The sexes of this species are not distinguished by any constant color-marks, nor have I been able to satisfy myself that there are any other than the purely sexual external characters, though the male may average rather the larger, longer-limbed and greater-eared. Nor are the young, from the time they are a few weeks old, materially different from the adults. The very young rabbits, however, have distinguishing color-marks. The dark portions of the hairs are extensive and intense; while the fur is so remarkably long, loose and straggling that this dark color is more apparent than it is in the adults. There are also some curious special head markings. The most conspicuous of these is a small pure white spot, exactly on the middle of the crown; which is usually accompanied by a white eye stripe, a white patch in front of the eyes, and white on the side of the nose. These markings are diffuse and irregular, but still quite noticeable; and the coronal spot persists usually until the animal is well grown. The foot-pads are white or whitish until they become gradually discolored by contact with the ground. The incisors are white. On comparing very young animals with individuals of the same size of the cotton tail of the region (the latter must be a week or so older to attain corresponding dimensions) the differences are very obvious. The larger species already displays the longer limbed and seemingly "looser-jointed" characteristics of its kind, in comparison with the close-set, chubby form of the smaller rabbit; the fur is very notably longer, looser and fluffier, without the smoothness and gloss of that of the other species; while the coloration is entirely mixed blackish and yellowish gray, without any of the rich ruddy tints of the limbs, breast and nape, which appear from the first in the smaller species. The black tips of the ears and their fawn colored margins are also characteristic.

Winter pelage. White, more or less mixed with gray underneath, and with rusty markings, especially on the legs and ears. The species probably never becomes entirely pure white, like *L. glacialis*.

MEASUREMENTS.

Coues's Number.	From tip of nose to				Tail to end of		Length of		Arm to end of claws.	Knee to end of claws.	Height of ear above notch.
	Eye.	Ear.	Occip.	Tail.	Verteb.	Hairs.	Fore ft.	Hind ft.			
4134[1]	2.40	4.00	4.50	19.00	4.50	6.50	2.75	6.00	7.00	10.00	4.30
4200[2]	2.20	3.50	4.50	19.00	4.50	7.00	2.75	5.75	7.50	10.75	5.00
4269[3]	2.25	4.00	4.50	18.00	5.00	7.00	2.75	5.75	7.25	11.00	4.00

The written history of this species, though somewhat involved, may be fully elucidated. As in the cases of so many of our western animals, we owe our first recognizable account of this species to Lewis and Clark, whose description, though not entirely correct, is perfectly recognizable as belonging here. In 1825, Dr. Harlan copied their accounts in substance, querying the animal as a variety of his *L. virginianus* (the *L. americanus* of authors). In 1829, Sir John Richardson gave an accurate description, as far as his slight material went, supplemented with the account of Lewis and Clark, and from his whole article it is evident he had this species in view, although he miscalled it *L. virginianus*, supposing it to be the same as Harlan's animal, which it is not. The Prince Maximilian repeated Richardson's mistake of nomenclature; his account is otherwise accurate and unmistakable. In 1837, Dr. Bachman described it in winter dress as *L. campestris*, the first tenable specific name. Shortly afterward, receiving it in summer dress, and being assured that it was not a "varying" hare, he redescribed it as *L. townsendii*. His subsequent suspicion, that his two names applied to the same animal in different vestures, as strongly expressed in the later work above quoted, has been amply verified. Since the rectified collation of synonymy by Prof. Baird in 1857, we find this well marked, abundant and widely distributed species noticed at greater or less length, and under its proper name, by nearly all the naturalists who have visited the northwestern or western territories, and reported the result of their observations. It may now be considered as a well known and thoroughly established species.

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[1] A fresh male specimen from near Milk River, July 5, 1874. Testes elongate, loosely pendulous, inguinal. Ear above occiput, 5.50. Eye grayish yellow. Humerus, 4.00. Femur, 5.00.

[2] A fresh female specimen from near Milk River, July 10, 1874. Ear above head, 6.00; width, pressed flat, 3.00.

[3] A fresh female specimen from Three Buttes, Montana, Aug., 9, 1874. Ear above head, 5.00; width, 2.25.

Its geographical distribution may be given with an undoubted close approximation to accuracy of detail. In British America, according to our chief if not only authority, Sir John Richardson, it has been traced north to 55°; "it is a common animal on the plains through which the north and south branches of the Saskatchewan flow, and which extend as far eastward as the Winepegoosis and southern extremity of Winepeg Lake." Along the northern border of the United States I have myself observed it from the beginning of the great plains just west of the Red River of the north, in eastern Dakota, to the base of the Rocky Mountains. It was most abundant in the region of the Upper Missouri and Milk River; but I have traced it in southeastern Dakota almost to the Iowa border. According to my observations it is the only jackass rabbit of Dakota and Montana. In Kansas, Mr. Allen states, "a few were seen in summer on the plains north of Fort Hays, and in winter from the western border of the state as far east as Bunker Hill Station." In this region they are associated with *L. callotis*. In Colorado, the same author mentions that the species occurs in the parks, another species being there characteristic of the timbered mountainous region. Mr. Allen also found it "more or less common everywhere" in southwestern Wyoming, and extremely abundant in certain localities. To conclude with this gentleman's observations, he furthermore noted its common presence in the valley of the Salt Lake, Utah, where, as in Kansas, it is associated with *L. callotis*. So far as we have gone, we now see that the animal inhabits the prairie region of more than the northern half of the United States, from the eastern limit of the great plains westward. Our advices from west of the Rocky Mountains are equally explicit. Dr. Suckley reports it from the Blue Mountains of Oregon, and Mr. George Gibbs states that it is common on the plains of the Columbia east of the Cascades. In California, Dr. Newberry has indicated the limit of the range, at the point where the species is replaced by the ordinary "jackass" of that state, *L. californicus*. "The Prairie or Townsend's Hare is unknown in the valleys of California, though we found it a short distance south of the parallel of 42°, so that it may be said to inhabit that state. In the upper part of the Sacramento Valley, and even in the hills northeast of Fort Reading, we found the 'jackass rabbit' (*L. californicus*) everywhere abundant, the only *hare*, in the common acceptation of the term, known to exist there — *L. artemisiæ*, *audubonii* and *trowbridgii* being all called rabbits. Crossing the 'divide' between Lassen's butte, and coming down into the interior or Klamath basin, on the upper branches of Pitt River, we lost sight of the Californian species, to see no more of it till our return south months afterward. In its place another species * * * began to be occasionally seen, at first very rarely, afterwards oftener, as we approached the

Columbia, but never anywhere, in the region we visited, becoming so abundant as the Californian hare in some parts of its habitat. I saw the first individual of this species on the shores of Wright Lake." From this the limit of southward extension in California would seem to be more restricted than it is in the regions farther east. We have nothing to show that it occurs on the immediate Pacific slopes, and it probably does not. Nor did I ever ascertain its presence in New Mexico or Arizona, where *L. callotis* is found.

This, then, is the characteristic hare of the great plains—towards its southern limit associated with *L. callotis* and *L. californicus*, and on its mountainous confines meeting with the hare of the timber of those regions—but throughout vastly the greater portion of its range occupying the territory as the only representative of the several great hares of the west, all of which are known, wherever found, as "jackass rabbits," to distinguish them from the small species of the *L. sylvaticus* type. It is further notable as the only one of the very large long-limbed and great-eared group which, like *L. americanus*, regularly turns white in winter. The change probably occurs, in most cases, throughout the range of the species; in northern parts it appears to be universal; and, in fact, the only advices we have that it does not change are from Kansas, where, Mr. Allen states, that about half the specimens he secured in December and January retained their summer colors. There may, however, be some localities where the change is the exception rather than the rule. But even in the most northerly portions of its range, the change does not appear to be complete. There remains much bluish-gray about the roots of the hairs, and brown, rusty or yellowish tinges in places. The pale brown or fawn colored borders of the ears, and the similar colors of the limbs towards their extremities, appear to be always retained. This is much as in *L. americanus.* The periods of the change are April and November.

In noting the habitat of the Prairie Hare, we must exclude from its range those portions which are wooded. Emphatically an animal of the plains, it never, so far as I have observed, enters timber, though ranging up to the very edge of the woods. Thus, we find it in the underbrush, sometimes quite heavy, of the river bottoms of the larger water courses in the west, but not in the woods that immediately fringe the rivers. It remains with us as we approach the timbered foot-hills of the Rocky Mountains, but we lose it in half a day's journey as we fairly enter the timber belt. It is as characteristic of the great sage barrens of the west as the sage cock itself; and in the more favored, grassy regions it is equally abundant. I have found it also in vast alkaline deserts I have traversed, and in those scarcely less forbidding tracts where a scanty herbage struggles with patches of prickly pear, mile after mile. In the more desolated regions, the only associate of its kind is the sage rabbit; near most of the water courses it will be found that the timber contains another ally, the common cottontail; but out on the broad rolling prairie, peculiarly its home, it flourishes almost alone.

Nor is the prairie hare in the least gregarious. I have never seen nor heard of several together, and indeed it is rare to find even two together, at any season whatever. It is one of the most solitary animals with which I have become acquainted. As we measure the weary miles of a day's march, a hare springs almost from beneath our feet, and another and another appears in succession, but always separated and independent of each other. I have never found any kind of locality even, which, presenting special attractions, might invite many hares together. All places are alike to them; the oldest frontiersman, probably, could never guess with any degree of certainty where the next hare to bound off before him would appear. If it have any preference, however, it is for "weedy" tracts of which the sage brush regions furnish the best examples; there it finds shelter which the low, crisp, grass of rolling prairie does not afford, and also doubtless secures a greater variety of food. Like many other animals of the great plains, it appears independent of water; but we must judge this to be only an appearance.

In the regions where I have studied this hare, the female brings forth in June and early July—oftener the latter—and apparently only one litter is produced each season. The number of young is five or six, as a rule. The form is simply constructed, without burrowing, in the grass beneath some low, thick bush or tuft of weeds. The young are said to suckle and follow the mother for a month or more. They are agile little creatures, even when only a week or two old, and it is only when very young that they can be caught by hand. In travelling along the Milk River (where the species was abundant), early in July, I had several little ones brought to me, and some I kept for a time in a box. They had been stumbled upon as they dodged about in the grass, disturbed from their nest by the passage of our party. Though only five or six inches long, they had all the motions and attitudes characteristic of the parents, and made shift to run about quite cleverly. They could not eat, but some of them could be coaxed to lick a little milk. Their appearance, even at this early age, was unmistakable; the differences between them and young sage rabbits of the same size are elsewhere given. By the end of July we happened upon no prairie hares still so young as to be taken in hand, though the third or half grown ones used often to stray about our camps, affording great amusement in the attempts instantly made by "all hands" to catch them.

I have not been eye-witness of the peculiar habits which doubtless mark the rutting period in this as in other species of the genus, having only been in the regions they inhabit later in the season. The period is over, I think, before June. Males taken during that month and the next are generally poor; the sexual organs are very apparent, as two long, linear masses in the inguinal region. After the care of the young, in July and August, the females are found much emaciated; and in fact, at no time during the summer, are these hares in good condition for the table. At other seasons the reverse may be considered the case by those who, unlike myself, are fond of rabbit-meat, the flesh, when in proper condition, being light colored, tender and not unpalatable. During the summer both sexes are terribly infested by a kind of tick, which fastens anywhere upon the body, but particularly about the ears, where I have found them almost in clusters. This tick appeared to me so different from any of those I had noticed on other rabbits, that I supposed it to be a new species, which I lately named *Ixodes leporis-campestris* ("Amer. Sportsm.," vol. iv, No. 22, Aug. 29, 1874). I regret that when I had the opportunity I did not make the necessary dissections, to see whether, like others of the genus, this species commonly harbors intestinal parasites. A tape-worm, *Tænia pectinata* Goeze (Diesing, Syst. Helminth. i, 498), is very frequent in *Lepus aquaticus*.

According to my experience, this hare is not much esteemed, either for its food or for its fur, by the whites of the region it inhabits, and it is accordingly not often an object of pursuit. I have not known it to be trapped; the few I have seen killed, besides those I secured myself, were shot wantonly, to test skill with the rifle, or decide a trivial wager. In the country of buffalo, elk and antelope, such small game is little heeded, and its pursuit made an object of ridicule. It is not so easy, however, to shoot the animal, except by skilful marksmanship with the rifle; so timorous is it, that when startled it rarely stops within range of a shot-gun; while its always unexpected appearance, and the great bounds it gives as it makes off, render it a difficult mark, notwithstanding its size. Mr. Townsend has described a mode of netting it in numbers, pursued by Indians. "Some one or two hundred Indians, men, women and children, collect, and enclose a large space with a slight net about five feet wide, made of hemp; the net is kept in a vertical position by pointed sticks attached to it and driven into the ground. These sticks are placed about five or six feet apart, and at each one an Indian is stationed, with a short club in his hand. After these arrangements are completed, a large number of Indians enter the circle and beat the bushes in every direction. The frightened hares dart off toward the net, and in attempting to pass are knocked on the head and secured. Mr. Pambrun, the superintendent of Fort Wallawalla, from whom I obtained this account, says that he has often participated in this sport with the Indians, and has known several hundred to be thus taken in a day. When captured alive they do not scream like the common gray rabbit (*L. sylvaticus*)."

The extraordinary agility of this animal, which would be inferred from inspection of its lithe yet muscular and free-limbed shape, has always attracted attention. Lewis and Clark speak of its leaping eighteen to twenty-one feet, and doubtless this is no exaggeration. Yet this is a matter shared by the allied species, and I do not think that the present surpasses *L. callotis* for example, in this respect. The two animals have always seemed to me alike in their powers of running and leaping. It is difficult to give one who has not seen the animals alive an idea of their singular appearance when at full speed, and the ground they get over in a few seconds is the more remarkable, considering the force they waste in unnecessary height of the leaps. The first sign one has usually of a hare which has squatted low in hopes of concealment, till its fears force it to fly, is a great bound into the air, with lengthened body and erect ears. The instant it touches the ground, it is up again, with a peculiar springy jerk, more like the rebounding of an elastic ball than the result of muscular exertion. It does not come fairly down, and gather itself for the next spring, but seems to hold its legs stiffly extended, to touch only its toes, and rebound by the force of its impact. The action is strikingly suggestive of the "bucking" of a mule, an affair with which people in the west are only too familiar. With a succession of these high jerky leaps the animal makes off generally in a straight course; there is nothing of the dodging and scuttling about that marks the running of the smaller rabbits. As it gains on its pursuers, and its fears subside, the springs grow weaker, just as a flat stone "skipped" on the water diminishes in length of the rebounds, and finally the animal squats in its tracks on its haunches with a jerk, to look and listen. If perfectly reassured, it may then lope on with easy steps, till it is out of sight, or it may squat low and disappear by folding back its ears behind some bunch of weeds. The ears, by the way, are curiously the most conspicuous part of the whole animal; few hares are seen, I fancy, as long as they keep those great organs folded flat. But more than likely, on its first halt, the hare's natural timidity will not permit it either to squat to steal quietly away. On the contrary it sits erect on its haunches, intent to discover new alarm. The attitude at such times is highly characteristic. One fore foot is advanced a little before the other, and the ears are held pointing in opposite directions. A hare in such an attitude as this is always upon the watch, and the slightest stimulation of its fears at such time is enough to start it on its bounding course. It is a beautiful exhibition of timid watchfulness.

I have never seen this hare stand erect with its fore paws off the ground, as some of its smaller relatives are wont to do, and I doubt that it ever assumes this attitude except perhaps momentarily. The position above described, and the ordinary squatting in its form, are the only motionless attitudes I have observed. On the few occasions when I have seen it feeding quietly, unsuspicious of danger, it moved about with alternate lengthening and doubling of the body, like that of the common rabbit under similar circumstances.

Regular Meeting, Monday, April 19, 1875.

Meeting this evening at 7.30 o'clock. The President in the chair.

W. P. Upham was elected secretary, *pro tem.* Records of preceding meeting read.

The Secretary announced the following correspondence: —

From N. J. Bartlett, Boston, Apr. 9; W. H. Whitmore, Boston, Apr. 9, 17; Dr. J. Plason, Wien, Nov. 20, 1874; Daniel A. Rogers, Chicago, Ill., Apr. 9; Brunn, Naturforschende Verein, Nov., 1874; Minnesota Historical Society, Apr. 3, 9; New Bedford Free Public Library, Apr. 2; Quebec Literary and Historical Society, Apr. 9; Smithsonian Institution, Dec. 30, 1874, Apr. 3; Vermont State Library, Apr. 10; Yale College, Corporation of, April 14.

The Librarian reported the following additions to the library :—

By Donation.

Cole, C. J. Registers and Programmes of the State Normal School in Salem, from 1856–1875. 73 pamphlets.

Huntington, A. L. Miscellaneous pamphlets, 6 vols. 8vo. Collection of the American Statistical Association, Vol. i, 1 vol. 8vo. Water Power of Maine. 1 vol. 8vo. Patent Office Reports, 1851, 1855, 1857, 1858, 1859. 5 vols. 8vo. Agriculture of Mass., by C. L. Flint. 8 vols. 8vo. Debates in Mass. Convention, 1853. 3 vols. 8vo. Message and Documents, 1852–3. 2 vols. 8vo. 1855–6. 1 vol. 8vo. History of the Reed Family. 1 vol. 8vo. Commerce and Navigation, 1850. 1 vol. 8vo. History of Lowell. 1 vol. 8vo. Græca Minora. 1 vol. 8vo.

Kimball, James. Cape Ann Advertiser, Dec. 18, 1874, Feb. 12, 19, 26, March 5, 12, 19, 26, Apr. 2, 1875.

Merritt, L. F. Essex County Mercury, Mch. 31, Apr. 7, 14, 1875. Salem City Documents, 1874. 1 vol. 8vo.

Twining, T., of Twickenham, England. Technical Training, by donor. 1 vol. 8vo. London, 1874.

U. S. Board of Education. Report of the Commissioner, 1873. 1 vol. 8vo.

U. S. Patent Office. Official Gazette for March, 1875.

By Exchange.

American Antiquarian Society. Proceedings of the, No. 63, 1874. 8vo.

Canadian Institute. Canadian Journal, Vol. xiv, No. iv, March, 1875. 8vo.

Gesellschaft Naturforschender Freunde, Berlin. Sitzungs-berichte, Jahrg, 1874. 1 vol. 8vo.

Naturforschender Verein, Brünn, Austria. Verhandlungen, Bd., xii, Heft I, II, 1873. 8vo.

Naturhistorische Verein der preussischen Rheinlande, und Westphalens, Bonn. Verhandlungen, Jahrg, xxx, III Folge, x Bd. 1873. Jahrg xxxi, iv Folge, I Bd., 1874. 8vo.

Naturwissenschaftliche Gesellschaft "Isis" in Dresden. Sitzungsberichte, Jahrg, 1874. Apr.-Sept. 8vo.

Verein der Freunde der Naturgeschichte in Meklenburg Neubrandenburg. Archiv xxviii, Jahrg, 1874. 1 vol. 8vo.

Vermont Historical Society. Registration Reports, 1871, 1872. 2 vols. 8vo. Vermont Legislative Documents, Vols. 1, 2, 4, 1874. 3 vols. 8vo. Laws of Vermont, 1874. 1 vol. 8vo. Vermont Legislative Directory, 1874–5. 1 vol. 12mo. Records of the Governor and Council of the State of Vermont. Vol. II, 1779–1782. 1 vol. 8vo. Transaction of the Vermont Dairyman's Association, 1873–4. 8vo. pamph.

Publishers. Forest and Stream. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post.

Arthur L. Huntington, of Salem, was elected a resident member.

Voted, That a committee be appointed to prepare a list of officers for the year ensuing, and to report a printed ballot at the annual meeting, May 12.

The chair appointed Messrs. James Kimball, E. C. Bolles, and W. Neilson.

Regular Meeting, Monday, May 3, 1875.

Meeting this evening at 7.30 o'clock. President in the chair. W. P. Upham was appointed secretary *pro tem.* Records read.

Arthur W. Foote, Albert H. Smith and John Mangan, all of Salem, were duly elected resident members.

Adjourned.

Annual Meeting, Wednesday, May 12, 1875.

Annual meeting this day at 3 p. m. The President in the chair. George M. Whipple was appointed secretary *pro tem.* Records read.

The Secretary announced the following correspondence: —

From C. A. Cutter, Boston, Apr. 29; J. C. Holmes, Detroit, Mich., April 22; B. Quaritch, London, April 22; J. L. Sibley, Cambridge, April 11; W. W. Weildon, Concord, May 1; Bergen, The Museum, Jan. 11; Berlin, Die Gesellschaft Naturforschender Freunde, Feb. 10; Buffalo Historical Society, May 7; Minnesota Historical Society, April 20, May 6; Nassauischen Vereins fur Naturkunde, Sept. 1; New England Historic Genealogical Society, May 5; Worcester Lyceum and Natural History Association, May 6.

The Librarian reported the following additions to the library:—

By Donation.

Abbott, A. A. Salem Gazette, Jan. 28, 1794 to Nov. 3, 1795, Jan. 3, 1797–Dec. 29, 1797. Essex Register, Jan. 11, 1809 (No. 3).

Bolles, E. C. Ladies' Repository. 2 vols. 8vo. Paley's Theology. 1 vol. 8vo. Titles of Jesus. 1 vol. 8vo. Ballou's Select Sermons. 1 vol. 8vo. Course of Time, by Pollock. 1 vol. 8vo. Lacon. 1 vol. 8vo. Layman's Legacy. 1 vol. 8vo. Practical Hints to Universalists. 1 vol. 8vo. Chris and Otho. 1 vol. 8vo. Pepy's Diary. 3 vols. 8vo. Louis xiv and Court of France. 1 vol. 8vo. Lectures on Domestic Duties. 1 vol. 12mo. Universalist Magazine, 1821. 1 vol. folio. The Holy Eucharist. 1 vol. 8vo. Bards of the Bible. 1 vol. 8vo. The Old and New. 1 vol. 8vo. Life and Character of A. Lincoln. 1 vol. 8vo. Ancient History by C. Rollins. 8 vols. 12mo. History of Universalism. 1 vol. 12mo. Notes on the Parables. 1 vol. 12mo. History of the Churches of New York. 1 vol. 12mo. Doddridge on Religion. 1 vol. 12mo. Ballou Review. 1 vol. 12mo. Universalist Hymn Book. 2 vol, 12mo. The Prophecies of Daniel. 1 vol. 12mo. Winchester Dialogues. 1 vol. 12mo. Jordan's Review. 1 vol. 12mo. Review on Hall. 1 vol. 12mo. Law of Kindness. 1 vol. 12mo. Rayner's Lectures. 1 vol. 12mo. Pingree's Debate. 1 vol. 12mo. History of the Waldenses. 1 vol. 12mo.

Colby University. Charter of, with Acts and Resolves. 1875. 8vo.

Goodell, A. C. Address before the Essex Institute, Oct. 5, 1874, at the Centennial Anniversary of the Meeting of the Provincial Assembly in Salem, Oct. 5, 1774. 1 vol. 8vo.

Hunt, T. F. Designs for Parsonage Houses, etc. 1 vol. 4to.

Lee, John C. Commercial Bulletin, Apr. 24, May 1, 1875.

Massachusetts Horticultural Society. Transactions of, Year 1874. Pt. II.

Packard, A. S., Jr. Boston Directory, 1847–8. 1 vol. 8vo.

Perkins, Geo. A. Robinson Crusoe, by D. Defoe. 1 vol. 8vo. Siege of Corinth. 1 vol. 18mo. Evelina, by Miss Burney. 1 vol. 18mo. Life of John Wicliff and others, by W. Gilpin. 1 vol. 12mo. Life of T. Scott. 1 vol. 12mo. Bacon's Novum Organum Scientiarum. 1 vol. 12mo. Grey's Hudibras. 2 vols. 8vo. Moore's Zeluco. 2 vols. 8vo. Modern Pilgrims, by Wood. 2 vols. 8vo. Spirit of Missions. 20 numbers. Miscellaneous pamphlets, 120.

U. S. Patent Office. Official Gazette, Apr. 6, 13, 1875.

Whipple, Geo. M. Mass. Special Laws, Vols. 9, 10, 1849–59. 2 vols.

By Exchange.

Archiv für Anthropologie. Band vii, Heft. II, 1875.

Boston Public Library. Bulletin for April, 1875.

Bowdoin College. Seventy-third Annual Catalogue of. 1874–5. 8vo pamph.

Königliche Bayerische Botanische Gesellschaft Regensburg. Flora, 1874. 1 vol. 8vo.

Literary and Philosophical Society of Liverpool. Proceedings of the. Vol. xxviii, 1873–4.

New Jersey Historical Society. Proceedings of the. Vol. iv, 2d Series, No. I, 1875. 8vo.

Publishers. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post. The Western. Turner's Public Spirit.

[To be continued.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., JUNE, 1875. No. 6.

One Dollar a Year in Advance. Ten Cents a Single Copy.

ANNUAL MEETING, WEDNESDAY, MAY 12, 1875.

[*Continued.*]

The annual reports of the officers and curators were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR

has been compiled, presenting in a concise form the work of the Institute, in its various departments, since the last annual meeting.

MEMBERS.—Changes occur in the list of our associates by the addition of new names, and the withdrawal of some by resignation, removal from the county or vicinity, and by death. In this connection notices of five of the resident and two of the corresponding members, who have deceased during the year, are inserted.

Joseph Sebastian Cabot, died at his residence in Salem, on Monday afternoon, June 29, 1874. He belonged to a family which has been prominent for a century and three-quarters in the annals of Salem. He was born in Salem October 8, 1796, and was the son of Joseph and Esther Orne (Paine) Cabot, grandson of Joseph and Rebecca (Orne) Cabot, great-grandson of Joseph and Elizabeth (Higginson) Cabot, great-great-grandson of John and Anna (Orne) Cabot. The last named ancestor, John Cabot, came to Salem about the year 1702, from the Isle of Jersey. After graduating from Harvard College, in the class of 1815, he studied law for a while in the office of Hon. Leverett Saltonstall, but did not pursue the study long. In 1829 he became President of the Asiatic Bank, and so continued until his death, with brief intervals while he was Bank Commissioner and during two visits to Europe. Mr. Cabot took a deep interest in the organization of the Harmony Grove Cemetery Corporation in 1840, and was a Trustee and President until his decease. He was also long a President of the Salem Savings Bank, and for many years on one of its most important committees. For several years he was President of the Massachusetts Horticultural Society, and was noted for his enlightened interest in, and taste for, horticultural and kindred pursuits. In 1843 and 1844 he served as an Alderman of the city, and in 1845–6–7 and 8, he was the Mayor of Salem, performing the duties with great efficiency and success. Mr. Cabot was twice married; first, August 2, 1843, to Martha Laurens Stearns, of Worcester, who died April 21, 1844; and secondly, March 3, 1852, to Susan Burley Howes (daughter of the late Frederick Howes, Esq.), who survives him. The deceased was a very companionable and courteous gentleman, and his financial skill was constant'y at the service of his fellow citizens.

Edward Brooks Peirson, M. D., one of our most skilful surgeons and physicians, died suddenly at his residence on Wednesday evening, November 18, 1874. He was a son of the late Dr. A. L. Peirson, likewise an eminent surgeon and physician, who lost his life by the Norwalk calamity in 1853; and was born Jan. 22, 1820, in this city. He received his early education in the Salem schools, was a graduate of Harvard in the class of 1840, studied his profession with his father and at the Harvard Medical School, and soon entered upon a very large and successful practice, particularly in surgery. For several years he was President of the Essex South District Medical Society, and was an earnest and active coöperator in all our useful local institutions for the benefit of the unfortunate. During the war he went to the southern battle fields to attend a wounded brother, and there acquired the seeds of a malarial disease from which he was never wholly freed. His sudden death will leave a lamentable void in this community. Dr. Peirson was twice married; first, to Catharine Pickman, daughter of Nath'l and Caroline (Sanders) Saltonstall (born May 18, 1823, died June 25, 1852); secondly, to Ellen, daughter of Justus and Hannah (Wood) Perry, of Keene, N. H.

Daniel Hopkins Mansfield, one of our old and efficient shipmasters, died on Thursday evening, December 24, 1874, in his 74th year. He was for several years previous to 1859, United States Consul at Zanzibar, and in 1863, 1864, and 1865, was an Alderman of this city. He joined the Salem Marine Society in 1849, and was its treasurer from 1860. He was for a quarter of a century or more a member of the First Baptist Church, and was a gentleman of simple habits and great integrity of character. He was son of Daniel Hopkins and Marcia (Tucker) Mansfield, and was born at Salem, January 14, 1801.

William Archer. On New Year's morn we were pained to hear the sudden decease of an associate which occurred during the evening previous (Dec. 31, 1874), having attended to his usual business that afternoon. He was a son of William and Elizabeth (Daniels) Archer, and was born at Salem July 27, 1816. After leaving the High School he served an apprenticeship with the late Edmund Currier, as a jeweller and silversmith, and subsequently established himself in that business, which he continued for several years in Beverly, Gloucester and Salem. In the spring of 1852 he became associated with the late Israel D. Shepard, as an auctioneer, and continued in that occupation till his death, having built up a large business as an auctioneer and real estate and insurance agent. He was industrious, prompt, energetic and faithful, to the interests confided to him. He was twice married; first, to Mary O., daughter of John H. and Lucy (Trafton) Glover; she died 9th September, 1860, aged 44 years. Secondly, June 19, 1862, to Mary J. Brown, of Charlestown.

John Barlow, one of our esteemed citizens, died on Monday afternoon, January 11th, 1875. He was the son of Henry and Catherine (Armstrong) Barlow, and was born in Shercock, Cavan County, Ireland, 10th July, 1813. He came to Salem July 3, 1823, where he has since resided. He engaged in the boot and shoe business, in which he was successful, and from which he retired several years since. He was an intelligent, thoughtful, active and useful citizen; and from his early manhood, had been associated with the military, the masonic and other bodies. He was an Alderman of the city in 1864 and 1865, and a Representative in the General Court in 1869 and 1870. He married Emeline C. Becket, daughter of Jonathan and Jane (Hyland) Campbell Becket.

Jeffries Wyman, M. D., Professor of Anatomy in Harvard College, died from a sudden hemorrhage, at Bethlehem, N. H., Sept. 4, 1874, where he had gone to escape the autumnal catarrh. He was the son of Dr. Rufus and Ann (Morrill) Wyman, and was born at Chelmsford, Mass., Aug. 11, 1814, graduated at Harvard in 1833, and soon after commenced the study of medicine. In 1843 he accepted the chair of anatomy and physiology in the Hampden-Sydney College, in Virginia. In 1847 he was appointed to succeed Dr. Warren as the Hersey Professor of Anatomy in Harvard. From 1856 to 1870 he was President of the Boston Society of Natural History. On the foundation of the Museum of American Ethnology and Archæology at Cambridge, he was named one of the seven trustees, and was at once requested by his fellow members of the board to take charge of the museum as its curator. The seven annual reports on the condition and accessions to the new museum are evidences of what he did in that direction. He also communicated to the Natural History Society, the American Academy of Arts and Sciences, and to various scientific journals, over one hundred important papers, the results of anatomical and anthropological studies. He married in December, 1850, Adeline Wheelwright, who died in June, 1855, leaving two daughters. He married secondly, in August, 1861, Anna Williams Whitney, who died February, 1864, leaving one son.

Nathaniel Bradstreet Shurtleff, M. D., died in Boston (Dorchester District), October, 17, 1874. He was born in Boston June 20, 1810, and was the son of Dr. Benjamin Shurtleff, a veteran practitioner of eminence. After his graduation at Cambridge in 1831, he commenced the study of medicine, taking his degree in 1834. In early life he was interested in anatomical studies, but latterly his taste lay in other directions, especially in early New England history. His numerous antiquarian and historical works will cause him to be long remembered. He was for many years one of the trustees of the Boston Public Library, a member of the School Committee, and for three years Mayor of the city. He was also member of the Board of Overseers of Harvard College, and for a long period the Secretary. A ceaseless activity characterized his whole life, and no man was more familiarly known, or had connected himself with so many associations, either of a permanent or temporary purpose. In July, 1836, he was married to Sarah Eliza, daughter of Hiram Smith, of Boston.

Meetings.—During the summer and early autumn five *Field Meetings* have been held. The first at Ipswich, on Wednesday, June 3, 1874. At the afternoon session, in the First Church, Prof. E. S. Morse, of Salem, spoke on "the fertilization of flowers;" Mr. F. W. Putnam gave an account of the shell heaps at the Light House and at Eagle Hill; Rev. T. Morong an historical notice of the Public Library the gift of Augustine Heard, Esq. *Second*, at Topsfield, Thursday, June 18, 1874. The afternoon session, in the Methodist Church, was attended by a goodly number of the citizens. Rev. James H. Fitts of Topsfield communicated a paper on "Robert B. Thomas, the maker of the Farmer's Almanac;" Vice-president F. W. Putnam gave an account of the fishes taken from Ipswich River; Charles J. Peabody gave a brief history of Topsfield; Dr. Jeremiah Spofford of Groveland, B. P. Adams of Topsfield, Richard Phillips, Samuel Todd and Charles H. Holmes, offered remarks. *Third*, at *West Newbury*, Thursday, July 18, 1874. At the session, in the Second Church, George D. Phippen of Salem, spoke on the flowers that had been collected, and also on the unwelcome class found in our gardens, known as weeds; Mr. John Robinson spoke of the ferns; Messrs. D. B. Hagar of the State Normal School in Salem, Abner G. Phipps, agent of the State Board of Education, J. Spofford of Groveland, Haydn Brown of West Newbury, Stephen M. Allen of Boston, and W. H. H. Marsh of Salem, were among the speakers. *Fourth*, at Rockport, Thursday August 6, 1874. Afternoon session in the Town Hall, Alfred Osgood of Newburyport, F. W. Putnam of Salem, A. W. Dodge of Hamilton, Albert H. Tuttle of the Ohio Agricultural and Mechanical College, Columbus, Rev. A. B. Hervey of Troy, N. Y., James Kimball of Salem, and others, addressed the meeting. *Fifth*, at Manchester, Friday October 2, 1874, by invitation of Mr. Lewis Tappan and other citizens of that town; the afternoon session at the Town Hall; among the speakers were F. W. Putnam, E. S. Morse, John Robinson and Rev. E. C. Bolles, all of Salem.

Evening Meetings have been held at the rooms, usually on the first and third Monday evenings of each month. At these meetings an increasing interest was manifested, and several valuable communications were presented, abstracts of which have been printed in the BULLETIN, or reserved for the HISTORICAL COLLECTIONS. The following may be specified: "A talk upon Art," by Charles C. Perkins, of Boston; "Observations among the various Scientific Collections of London," by E. C. Bolles; "A List of Birds observed at various localities contiguous to the Central Pacific Railroad, from Sacramento City, Cal., to Salt Lake City, Utah," by Robert Ridgway; "Fishes and Crayfishes from Mammoth Cave," by F. W. Putnam; "An account of the process in the manufacture of glass," by John Robinson; "On the Theory of Evolution," by E. S. Morse; "An account of the Archæological Discoveries of the Hayden Expedition," by F. W. Putnam; "Archæological Researches in Kentucky," by F. W. Putnam; "Comb Manufacturing," by Haydn Brown; "On the System of Visible Speech," by A. Graham Bell; "Ferns of Essex County," by John Robinson; "On the Fortifications and other enclosures made by the Indians and the older races in North America," by F. W. Putnam; "Synonymy, description, history, distribution, and habits of the Prairie Hare" (*Lepus campestris*), by Elliott Coues; "The applications of Galvanic Electricity to a few of the arts of every day life," by J. H. Stevens; "On East Indian and Japanese Paper," by E. C. Bolles. At the meeting on the 16th of November, 1874, a full account was given of the examination of an Indian burial place in Marblehead, and the finding of several skeletons *in situ* by A. C. Goodell, Jr., W. P. Upham, E. S. Atwood, C. Cooke, E. S. Morse, A. H. Johnson and E. C. Bolles, who were present at the examination and excavation. The centennial anniversary of the meeting of the Provincial Congress at Salem, was duly observed at the Rooms of the Institute, October 5, 1874, by an address from Vice-president A. C. Goodell, Jr., and a social gathering.

LECTURES AND CONCERTS. — An interesting series of eight lectures, concerts and entertainments were given in Mechanic Hall. 1st, Monday, Nov. 9, James Steele Mackaye, upon the "Philosophy of Dramatic Expression; 2d, Monday, Nov. 23, concert by the Boston Swedish singers; 3d, Saturday, Dec. 5, concert by Theodore Thomas, with his full orchestra of sixty performers; 4th, Monday, Dec. 14, Charles C. Perkins of Boston, on

"Art," illustrated by the calcium light; 5th, Monday, Jan. 11, Rev. E. C. Bolles of Salem, "Rambles in Europe," illustrated; 6th, Monday, Jan. 25, Daniel Dougherty, Esq., of Philadelphia, on "Oratory"; 7th, Monday, Feb. 8, Rev. E. C. Bolles of Salem, "Rambles in Europe," illustrated by means of the lantern; 8th, Monday, March 15, Prof. A. M. Mayer, of Stevens' Institute, "Sound and how we hear," illustrated by fine lantern pictures.

Also a *supplementary course*, which comprised a concert by the Schumann Club of Boston, under the direction of Mr. Carlyle Petersilea, on Monday, May 3d; Select Readings by Prof. J. M. Churchill, of Andover; and a Lecture by Rev. E. C. Bolles, of Salem, subject "Rambles Abroad," are announced to be given soon.

In addition to the above, James Steele Mackaye, delivered a lecture, at the Rooms in Plummer Hall, Tuesday, Nov. 24, on "The Life, Labors, and Peculiar Discoveries of Francois Delsarte," and on Thursday, March 25, Mr. E. Ingersoll, a lecture on "The Ancient Inhabitants, or Cliff Dwellers of the Canons of the Colorado Valley."

HORTICULTURAL. — The operations of this department have been successfully conducted during the past season. Five exhibitions have been held, two devoted to the show of special flowers, the others more general in their character. 1st, on Saturday evening, June 27; a beautiful display; Cereus nycticollis (variety of Night Blooming Cereus) a native of Mexico; Phyllocactus crenatus, and several other species of cacti; Cypripedium spectabile, etc. 2d, Tuesday and Wednesday, June 30 and July 1, the rose show. 3d, Tuesday, July 21, special; Clerodendron Balfouri; Alamanda Scottii, etc. 4th, Wednesday, July 29. 5th, the Annual, from Tuesday, Sept.

15, to Friday, Sept. 18, maintained the usual character for a display of many choice and beautiful flowers and fine fruit, vegetables, etc., though the decorations were not so elaborate as in some previous seasons. The following prizes and gratuities were awarded:—*Flowers.* Cut flowers; 1st, Charles A. Putnam, 2d, John Robinson, 3d, C. A. Beckford. Pot Plants; 1st, David M. Balch, 2d, John Robinson. Stand of growing plants; 1st, John Robinson. Arranged Basket of Cut Flowers; 1st, C. H. Buxton. Collection of Gladioli; 1st, Charles A. Putnam. Parlor Bouquet; 1st, Mrs. Arthur Kemble. Wardian Case; 1st, John Robinson. Ferneries, circular; 1st, John Robinson. *Fruit.*—Collection of Pears; 1st, Wm. Maloon, 2d, Joseph A. Goldthwaite. Best single dish of Bartletts; T. Putnam Symonds. Best single dish of Seckel; T. Putnam Symonds. Best single dish of Duchess de Angouleme; Charles A. Ropes. Best single dish of Louise Bonne; R. G. Goss. Collection of Apples; 1st, C. A. Ropes, 2d, H. F. Skerry. Best single dish of Apples; Henry Very. Collection of Peaches; 1st, George Bowker, 2d, Charles M. Richardson. Best single dish of Peaches; F. Lamson. Best single dish of Rogers No. 4 and 15; H. F. Skerry. Best Hartford Prolific; T. Putnam Symonds. Best Creveling; George Russell. *Vegetables.*—Best peck of Early Rose Potatoes; E. C. Larrabee. Best four Marrow Squashes; Plummer Farm School. Best four heads of Cauliflowers; E. C. Larrabee. Best five heads of Cabbages; Plummer Farm School. Best dish of Trophy Tomato; W. F. Gardner. Best dish of other varieties of Tomato; E. C. Larrabee. Best five Beets; Plummer Farm School. Best peck of Onions; Plummer Farm School. Largest and best-shaped Squash; Plummer Farm School. Very large and fine Sweet Corn; S. D. Tilton.

Art Exhibition. — At the quarterly meeting in February, it was mentioned that the Misses Mary E. and Abby O. Williams of Salem, would be willing to deposit in the Rooms of the Institute, temporarily, their valuable collection of Paintings, many of which were copied by them from the "old masters," during a residence of several years in Rome. After some conversation, the subject was referred to the Curators of the department of Art, to make the necessary arrangements, and to tender to the ladies the sincere thanks of the Institute for this liberal proposal. The collection was received on Thursday, March 4, and it was deemed expedient, with so fine a basis, to have an Art Exhibition, and to solicit contributions to this end, though not without some slight misgivings of its success, and thus fulfilling a long cherished desire of those connected with the Institute.

The Exhibition was opened Thursday, March 11, and continued to Friday evening, March 19. The result was a surprise to all parties interested. From the first day that notice was given, pictures of all kinds were sent in with the greatest liberality, until some three or four hundred had been collected and hung upon the walls of the exhibition room. They comprised oil paintings, water colors, charcoal sketches, pen and ink drawings, and engravings; among them were works of decided merit. The sides of the hall were almost entirely covered with cloth of a maroon color, against which the pictures were suspended. The alcoves, which seemed at first to present some difficulties, were fitted up with frames, arranged so as to produce indentations or recesses in the sides of the hall, and gave an extremely pleasing effect. All four sides of the room were completely covered with pictures; a long array of gas burners fitted with reflectors, threw down upon them a brilliant light, so that the entire effect of the scene was very cheerful, pleasant and enlivening.

The whole number of pictures registered was three hundred and forty; a Catalogue of which was printed in the April number of the BULLETIN for the present year.

LIBRARY. — The additions by donations and exchange during the year are as follows: —

Donations.

Folios,	31	Pamphlets and Serials,	5,603
Quartos,	37	Almanacs,	77
Octavos,	457		——
Duodecimos,	168	Total,	5,680
Sexdecimos,	36	Total of bound volumes,	729
	—		——
Total,	729	Total of Donations,	6,409

Exchanges.

Quartos,	1	Pamphlets and Serials,	835
Octavos,	141	Total of bound volumes,	145
Duodecimos,	3		——
	—	Total of Exchanges,	980
Total,	145	Total of Donations,	6,409
			——
		Total,	7,389

Of the total number of pamphlets and serials, 3,143 were pamphlets, and 3,295 serials.

The donations to the Library for the year have been received from one hundred and three individuals and fifteen societies and departments of the General and State Governments. The exchanges from seventy-five societies and incorporate institutions, of which forty-six are foreign; also from editors and publishers.

From the editors of the "American Naturalist" forty-five serial publications.

MUSEUM.—Many valuable specimens in natural history have been given during the year, and are on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. These have been reported at our meetings, and have been duly acknowledged to the several donors. In addition to the above, several interesting specimens of an historical character have been deposited in the Rooms of the Institute, and contribute very much of interest and value to the antiquarian and historical portion of the Museum. A Committee appointed for the purpose have rearranged the collection of relics, and local antiquities in the eastern ante-room, and by the efforts of Rev. E. C. Bolles and others, several series of specimens in Technology have been added.

PUBLICATIONS.—The BULLETIN has been continued in monthly numbers, giving full reports of the doings of the Institute, and abstracts of papers read at the meetings. The HISTORICAL COLLECTIONS, Vol. xii, Nos. 3 and 4, and Vol. xiii, No. 1, have been printed.

FINANCIAL.—The Treasurer's Report shows the following receipts and expenditures during the year. Additional means are requisite to perform, in a suitable manner, the various duties which the members may reasonably expect.

DEBITS.

General Account.

Athenæum, Rent, etc., $350.00; Salaries, $745.00; Coal, $160.50,	$1,255.50
Lectures, $116.55; Express, $43.32; Postage, $10.50,	170.37
Insurance, $50.00; Rosetta Stone, $16.00; Gas, $68.35,	134.35
Photographs, $35.84; Publications, $1,129.37,	1,165.21
Collecting, $5.00; Sundries, $23.38,	28.38

Historical.

Binding, $95.00; Books, $10.00,	105.00

Natural History and Horticulture.

Horticultural Exhibitions, $90.43; Sundries, $5.89, . . .	96.32
	$2,955.13

CREDITS.

General Account.

Dividends Webster Bank, ...	30.00
Assessments, $1,278.00; Publications, $483.05, ...	1,761.05
Life Membership, $30.00; Sundries, $134.63, ...	164.63
Athenæum, proportion of coal and janitor, ...	155.25
Cash at beginning of year, ...	182.68
Balance due Treasurer, ...	89.58

Historical.

Dividends Naumkeag Bank, ...	22.00

Natural History and Horticulture.

Dividends P. S. & P. R. R., $20.00; Lowell Bleachery, $64.00, . .	84.00
Horticultural Exhibitions, ...	85.94

Davis Fund.

Coupons Burlington and Missouri R. R., ...	240.00
Coupons Dixon, Peoria and Hannibal R. R., ...	140.00
	$2,955.13

The receipts and expenditures on account of the recent courses of lectures and entertainments, and the Art Exhibition in March, which were severally placed in charge of the curators of the department of the Arts, are not included in the above statement; the supplementary course not having been concluded. The same will be carried to the next year's account.

Mr. W. P. Upham read a new draft of the Constitution and By-laws, as prepared by the special Committee appointed at the meeting held on the 16th of November last. After discussion the further consideration was deferred to the next quarterly meeting on the second Wednesday of August.

The following Officers were then elected, until others shall be chosen in their stead:—

President.

HENRY WHEATLAND.

Vice Presidents.

Of History—A. C. GOODELL, Jr. *Of Natural History*—F. W. PUTNAM.
Of Horticulture—WILLIAM SUTTON. *Of the Arts*—D. B. HAGAR.

Recording and Home Secretary.

GEO. M. WHIPPLE.

Foreign Secretary.

A. S. PACKARD, Jr.

Treasurer.

HENRY WHEATLAND.

Librarian.

WILLIAM P. UPHAM.

Superintendent of the Museum.

T. F. HUNT.

Curators of Historical Department.

W. P. Upham, M. A. Stickney, James Kimball.

Curators of Natural History Department.

H. F. King, G. A. Perkins, William Neilson.

Curators of Horticultural Department.

T. F. HUNT, D. M. Balch, W. P. Andrews.

Curators of Department of the Arts.

C. H. Higbee, James A. Gillis, George M. Whipple.

Finance Committee.

John C. Lee, Jas. Upton, Geo. D. Phippen, Jas. O. Safford.

Lecture Committee.

D. B. Hagar, George Perkins, William Northey, C. H. Higbee, E. C. Bolles, A. H. Johnson.

Field Meeting Committee.

A. W. Dodge, E. N. Walton, N. A. Horton, Alfred Osgood.

Library Committee.

J. G. Waters, E. B. Willson, Geo. F. Flint.

Publication Committee.

A. C. Goodell, Jr., F. W. Putnam, R. S. Rantoul, Henry M. Brooks, E. S. Atwood.

On motion of Mr. C. H. HIGBEE it was

Voted, That the thanks of the Essex Institute be tendered to the officers and members of the Schumann Club, of Boston, for their valuable services gratuitously rendered, at the concert given on the evening of May 3d, in the Supplementary Series of Lectures and Entertainments.

James Silver Williams and Henry F. Perkins, both of Salem, were elected resident members.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., JULY, 1875. NO. 7.

One Dollar a Year in Advance. Ten Cents a Single Copy.

FIELD MEETING AT HAMILTON, THURSDAY, JUNE 3, 1875.

THE first field meeting of the season was held at the Chebacco House, in Hamilton, this day. There is much that is enjoyable about the woods and ponds in the vicinity of the hotel, and the place is thereby very popular as an objective point for parties during the summer months. It is also a favorite resort for the zoologists and the botanists, as the finding of many of our animals and plants, some of exceeding interest, are frequent rewards of a half day's tramp. The members of the Institute are, therefore, always pleased in the selection of this place for one of their field days.

The Proprietors of the House, the Messrs. Whipple, are always courteous and very assiduous in their efforts to promote the objects of these meetings, and to contribute to the comfort of the members and friends in attendance.

The forenoon was devoted to the usual rambles in search of objects of interest, as the inclination of each dictated, and many fine specimens were found. At one o'clock lunch was partaken in the woods near the house.

At 2.30 P. M. the afternoon session was held in the Hall of the Chebacco House. The PRESIDENT in the chair.

The records of preceding meeting were read.

Vice President F. W. PUTNAM gave an interesting account of his late visit to Newburyport for the purpose of examining some curious groups of stones recently found by W. C. Johnson, Esq., of that city, while prospecting on his land, about four miles from the city, near Parker River. These stones were in a few instances of such singular arrangement as to lead to the supposition that they possibly indicated something of archæological importance.

Mr. Putnam mentioned that besides a row of piles of stones, each about eight feet in diameter, there was found a few hundred feet distant a singular arrangement of small stones, in the form of the letter E, the length of the letter being six feet, and the width about two feet. Near this was a small circle of stones about four feet in diameter, with a number of stones inside the circle. Near this was a slight earth mound. In the immediate vicinity were a number of small heaps of shells. These were the surface indications; and while there was undoubted evidence of the stones having been placed in these positions a long while ago, so that the soil and sod had nearly covered them, still there was nothing that indicated a great antiquity.

Excavations were begun in the expectation of finding that the stones had been placed as marks of sepulture, but nothing except a small piece of Indian pottery was brought to light. Finally the small earth mound was opened, and the clay, burnt to some depth, showed that a fire had been kept there for a long time. Pieces of the old-fashioned square brick, fragments of green window glass and lead sash, such as were imported by the first settlers, were also found, showing that part, at least, of the mound had been caused by some of the early settlers, though there is no tradition of the land in question ever having been settled upon or cleared for cultivation.

Thus, after a most careful consideration, the singular arrangement of the stones remains a mystery. That any white person should take the trouble to arrange the stones, as found, seems improbable, while the absence of signs of burial under them, would indicate that if made by the Indians, they were for the purpose of simply marking the spot for some particular reason. Stone piles of various shapes have been found in different parts of the country, evidently the work of the Indians, and it may be that these at Newburyport, which was a well known resort of the Indians, were also their work, though nothing definite could be obtained as to their origin. Photographs of these heaps were exhibited.

Mr. **ALFRED OSGOOD** of Newburyport, said that the early white settlers sometimes used stones to mark their fishing grounds, and suggested that these heaps might be for that purpose.

Mr. **PUTNAM** wished publicly to thank Mr. Johnson for his thoughtfulness in calling attention to these curious piles of stones, as often very valuable relics are found by a little care and research, from indications far less promising in appearance than those in question, though often, as in the present case, an examination may prove them to be unimportant.

Mr. **Osgood** gave an informal talk on the present aspect of the mining lands and the presence of minerals in the vicinity of Newburyport, and expressed himself rather skeptical as to the richness and value of any of the deposits yet found. Without doubt valuable ore is there, though whether it would pay to work the mines, expecting a large yield, is questionable. He thought that no new discoveries had been made favorable to such an opinion.

Mr. J. H. **Stevens** of Salem, being called upon, said that the Institute was doing much to develop among the people, and particularly the young people, a knowledge of natural history. He then gave an interesting account of the growth of the cane brakes (*Arundinaria macrosperma*) in the Southern States. Hundreds of miles of country along the Mississippi bottoms are covered by these brakes, some growing to the height of twenty-five or thirty feet. When young and tender the leaves furnish food for deer and other animals. He had often wandered, rifle in hand, through that country, and felt the want of the kind of knowledge that the Essex Institute and these field meetings were disseminating in order to appreciate the opportunities for the study of nature there presented.

He also spoke of the American Tulip Tree (*Liriodendron tulipifera*), which grows luxuriantly in the same vicinity, and when in bloom presents the appearance, as seen from the high bluffs, of an immense flower garden extending sometimes for miles.

Mr. **Putnam** said that in the Mammoth and several other caves in Kentucky there were often found pieces of canes, with one end burned, and it was supposed that they had been filled with grease and used as torches by some of the Indian race, who, to a certain extent, used the caves for various purposes.

Miss L. H. Upton of Salem presented the following list of plants found in bloom during the excursion:

LIST OF PLANTS FOUND IN FLOWER AT ESSEX, JUNE 3, 1875.

Anemone nemorosa L. Wind-flower.
Ranunculus abortivus L. Small-flowered crowfoot.
Ranunculus acris L. Buttercups.
Coptis trifolia Salisb. Gold-thread.
Aquilegia Canadensis L. Columbine.
Sarracenia purpurea L. Pitcher-plant.
Viola lanceolata L. Lance-leaved white violet.
Viola blanda Willd. Sweet white violet.
Viola cucullata Ait. Blue violet.
Prunus Pennsylvanica L. Wild red cherry.
Potentilla Canadensis L. Cinque-foil.
Fragaria Virginiana Ehr. Wild strawberry.
Amelanchier Canadensis Torr. & Gray. June-berry.
Aralia nudicaulis L. Wild sarsaparilla.
Cornus Canadensis L. Dwarf cornel. Bunch-berry.
Oldenlandia cærulea. Houstonia.
Antennaria plantaginifolia Hook. Mouse-ear.
Taraxacum dens-leonis Desf. Dandelion.
Vaccinium Pennsylvanicum Lam. Dwarf blueberry.
Vaccinium corymbosum L. High blueberry.
Trientalis Americana Pursh. Star-flower.
Veronica serpyllifolia L. Thyme-leaved speedwell.
Rumex acetosella L. Sheep sorrel.
Arisæma triphyllum Torr. Indian turnip. Jack in the pulpit.
Corallorhiza innata R. Brown. Coral-root.
Cypripedium acaule Ait. Lady's slipper.
Sisyrinchium Bermudianum L. Blue-eyed grass.
Polygonatum biflorum Ell. Smaller Solomon's seal.
Smilacina racemosa Desf. False spikenard.
Smilacina bifolia Ker. Wild lily of the valley.
Medeola Virginica L. Indian cucumber root.

After remarks from Dr. J. P. Fessenden, Rev. S. C. Beane and Messrs. E. N. Walton and N. A. Horton of Salem, and the adoption of a vote of thanks to the Messrs. Whipple of the Chebacco House, for their kindness in placing at the disposal of the Institute their house and grounds for the day, the meeting adjourned.

REGULAR MEETING, MONDAY, JUNE 21, 1875.

Regular meeting this evening at the rooms. The PRESIDENT in the chair. Records read.

The PRESIDENT read extracts from the will of the late Abby W. Ditmore of Salem bequeathing to the Institute certain sums, subject to conditions which were stated. As the full amount of the bequests was not to be paid at present, the matter was laid over for action at a future meeting.

The PRESIDENT stated that a collection of documents, papers, prints, etc., relating to the various centennial celebrations of this period had been commenced, and requested contributions from members and friends to this object.

Mr. CHARLES H. HIGBEE stated that he had received some very fine and valuable specimens of algæ from Mrs. A. L. Davis, Mrs. H. A. Cochran and Mrs. Bray of Gloucester, also from N. S. B. Herbert of Lynn, and that these specimens would be placed in the Institute collection. He desired thus publicly to thank these persons for their kindness and attention.

J. H. Stevens, Philip H. Kimball and Miss Mary E. Kinsman of Salem, and H. M. Cross of Newburyport, were duly elected resident members.

The PRESIDENT alluded to the decease of one of our associates, CHARLES WENTWORTH UPHAM, which took place on Tuesday morning, June 15, 1875, and gave a brief account of his connection with the Society and of his strong interest in its objects. He spoke also of his early life and of his various literary labors, and of his interest in the establishment of the State Normal School in Salem.

Gen. HENRY K. OLIVER of Salem made some very appropriate remarks on the death of Mr. Upham, and in conclusion offered the following resolutions for the consideration of the meeting.

Whereas, it has pleased the Supreme Ruler of events to remove by death our honored and venerated associate and fellow citizen, CHARLES WENTWORTH UPHAM, long connected with the Essex Institute, and for half a century identified with this community in many relations:

Resolved, That the members of the Institute, deeply feeling the irreparable loss it has sustained, enroll his name with unfeigned grief among the most eminent of its past associates.

Resolved, That while we mourn the loss of so valued a member of our society, and so justly esteemed a citizen, our sorrow is tempered as we look back upon a life, so true to all the purposes of life, and read the record of the varied virtues and singular excellencies, which characterized the whole career of our departed associate.

Resolved, That in his career as a faithful and earnest minister of the Gospel, in his zealous labors as a citizen for the best interests of our community, as a patriotic officer in state and nation, as a successful laborer in the fields of literature, biography and history, he has for himself fully won the highest reputation, and conferred increased distinction upon our ancient municipality.

Resolved, That as we review the long and inspiring catalogue of the great and good men, who from its earliest days have adorned and illustrated our historic city, our just pride receives a new impulse, in adding to the honored roll the name of one so fully entitled to receive reverent admiration and honor, among the most highly honored and revered.

Rev. E. C. **Bolles** moved the adoption of these resolutions, and paid an eloquent tribute to the character and memory of Mr. Upham.

Rev. E. S. **Atwood** heartily endorsed the resolutions offered by Gen. Oliver. He spoke of his long and valued intimacy with Mr. Upham, who had often expressed to him his great interest in the various clergymen of the city, without regard to sect or denomination; also of his valuable advice as to the best method of professional life; of his interest in the Institute and its objects; of his extensive knowledge of books in the various departments of literature; of his quick intellect and cheerfulness of mind to the end of life.

After further remarks from Messrs. C. H. Higbee and A. C. Goodell, Jr., the resolutions were unanimously adopted.

Rev. E. S. **Atwood** said that some more formal notice should be taken of the death of so distinguished a member of the Institute, and suggested that it might be well to hold, at some future time in the rooms of the Society, a memorial meeting, at which time a memoir of the deceased should be read, and moved that a committee be appointed to consider the subject. The motion was adopted, and Messrs. E. S. Atwood, E. C. Bolles, H. K. Oliver, A. C. Goodell, Jr., and F. W. Putnam were appointed as the Committee.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., AUGUST, 1875. NO. 8.

One Dollar a Year in Advance. Ten Cents a Single Copy.

FIELD MEETING AT BYFIELD, THURSDAY, JULY 1, 1875.

THE second field meeting of the Essex Institute for the present season was held this day, at Byfield, a locality highly suitable for a gathering of this character; its historical associations cannot fail to interest the student in our local history, and its diversified scenery and natural conditions offer a wide field for the exploration of the naturalist.

This territory, through which the Parker River flows, having upon its adjacent interval lands some of the most fertile farms of the county, was granted in 1635, a large portion on the south side to Richard Dummer and on the north to Henry Sewall, whose descendants have ever since held prominent positions in the history of this country. These lands, more especially that portion near "The Falls," so called, were first used for the keeping of cattle and sheep that came over in the Dutch ships in 1635, and were owned by Richard Dummer, Henry

Sewall and Richard Saltonstall. It appears that for several years afterwards attention was given to the raising of sheep in this place.

The people living in this territory, part of which is in the township of old Newbury and part in that of old Rowley, being at a distance from the churches of the two towns, in 1702 built a church and established a parish under the name of "Rowlberry." In November, 1706, it was organized as the "Falls Parish," and Rev. Moses Hale was settled as the first minister. In 1710 it was incorporated as that of Byfield in honor to Nathaniel Byfield,[1] a liberal benefactor to the parish.

To visit this place the members of the Institute and their friends took the cars of the Eastern Railroad, the principal portion at Salem, the others at the several stations on the route, for Newburyport and thence proceeded to Byfield, six miles distant, in barges furnished by Mr. Enoch T. Northend, proprietor of the Newburyport and Amesbury Horse Railroad. The route taken was somewhat circuitous in order to favor the party with an inspection of the mining region and other notable places in the vicinity. A halt was made near the Highfield mines, where an hour was pleasantly passed in examining the grounds and witnessing the mining operations, by the courtesy of Messrs. Patterson, Chipman and Boynton.

At the Boynton Mine, in charge of Mr. Robertson, the shaft is the deepest in the whole district. The ore last taken out is the best. The Chipman works, under the care of Mr. Patterson, have assumed an orderly and prosperous appearance. A new building has been erected, 65 × 30 feet with attachments, that give an engine house, a blacksmith and machine shop, pumping gear, tool room, office and shaft-house combined. All the machinery is said to be of the most approved kind. The mine has been timbered. From the depth now obtained, seventy-five feet, laterals are being run out north, east and south.

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[1] Col. Nathaniel Byfield, son of Rev. Richard Byfield of Long Dutton in Sussex, came to New England in 1674. He was speaker of the House of Representatives in 1693; a colonel, Judge of Probate and Common Pleas for the new county of Bristol, afterwards of Suffolk, also of his Majesty's Council, etc. He died June 6, 1733.

The next stopping place was at the fork of the road near the "Longfellow house," the "Indian burial grounds" and the "cave." All three of these places were visited. The house in which the great-grandfather of the present Henry W. Longfellow was born is on a sightly spot, surrounded by rich, smooth fields. It is now in a dilapidated condition. It was probably built in the early part of the last century by Stephen Longfellow, a son of William,[2] the emigrant ancestor, who came in his youth to Newbury, and married, Nov. 10, 1678, Ann, daughter of Henry

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[2] William Longfellow,^{1} born about 1651, in Hampshire, Eng., came in his youth to Newbury; m. Nov. 10, 1678, Ann, daughter of Henry Sewall. He was ensign of the company that embarked in the expedition of Sir Wm. Phips against Quebec, and with nine others was shipwrecked on the return at Anticosti (one account says Cape Breton) in October, 1690.

Stephen Longfellow,^{2} son of the above, b. at Newbury 22 Sept., 1685; m. 25 Mar., 1713. Abigail, daughter of Rev. Edward Tompson of Marshfield. He was a lieutenant and a selectman; d. 17 Nov., 1764, at Byfield.

Stephen Longfellow,^{3} son of the above, b. at Byfield 7 Feb., 1723, gr. Harv. Coll. 1742; went to Portland Apr. 11, 1745, and opened a school. He was for many years one of the most active, useful and intelligent men in the town; town clerk, register of Probate and clerk of Judicial Courts; he married in 1749 Tabitha Bragdon, of York, Me. He died at Gorham, Me., in 1790.

Stephen Longfellow,^{4} son of the above, born at Portland in 1750, went to Gorham in 1775. He was largely employed as a surveyor, selectman, etc. Judge of C. C. P., Rep. & Senat. in State Legis. In 1773 m. Patience Young of York, Me. He died in Gorham in 1824, aged 74 years.

Stephen Longfellow,^{5} son of the above, born in Gorham Mar. 23, 1776, gr. Harv. Coll. 1798, studied law, and on being admitted to the bar in Portland he entered at once upon a large practice and stood in the front rank of able counsellors; member of the Hartford convention in 1814, also a member of U. S. Congress. He died Aug. 2, 1849.

Henry W. Longfellow,^{6} son of the above, born at Portland, Feb. 27, 1807, gr. Bowd. Coll. 1825. Prof. at Bowdoin and at Harvard. Poet. Resides at Cambridge.

Sewall,[3] and this land was part of the estate which she received from her father, and is now occupied by Mr. Joseph Longfellow, a lineal descendant.

Byfield factory, probably the site of the first cotton mill in the country, was then visited. At this place, about 1790, Jacob Perkins, the well known inventor (born at Newburyport, July 9, 1766, died at London, July 30, 1849), put up a small mill and first demonstrated the practical working of his machine for cutting and heading nails at one operation. This invention, though, it is said, not a pecuniary success to the inventor, has since its introduction completely revolutionized the mode of manufacturing nails. Here Paul Moody in his youth found valuable instruction and satisfactory employment, and laid the foundation of a brilliant career as a mechanician, and whose name will be always identified with the introduction of manufacturing industries in Waltham and Lowell. A mile further on was noticed, shaded by elms, the residence of the second minister of the parish, Rev. Moses Parsons, from June 21, 1744, when he was ordained, until his death, Dec. 11, 1783. In this house was born, Feb. 24, 1750, his son Theophilus Parsons, the eminent jurist, Chief Justice of the Supreme Court of Massachusetts from 1806 until his decease, Oct. 30, 1813. The house was built, probably, in 1706.

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[3] Children of Henry Sewall:—

1. *Hannah*, born at Tamworth, May 10, 1649; m. Jacob Tappan of Newbury, Aug. 24, 1670; d. Nov. 12, 1699.
2. *Samuel*, b. Bishopstoke, Hants, March 28, 1652; gr. Harv. Coll. 1671; m. Feb., 1675–6, Hannah, daughter of John Hull of Boston, Judge Sup. Court, Mass., and Ch. Justice; d. Jan. 1, 1729–30.
3. *John*, b. at Baddersly, Hampshire, Eng., Oct. 10, 1654; came to New England in 1661; m. Hannah Fessenden of Cambridge, Oct. 27, 1674; lived with his father at Newbury, and there died before him, Aug. 8, 1699.
4. *Stephen*, b at Baddersly, Aug. 19, 1657; m. Margaret, dau. of Rev. Jona. Mitchell of Cambridge, June 13, 1682; resided at Salem, where he was Register of Deeds for Essex, etc.; d. Oct. 17, 1725.
5. *Jane*, b. at Baddersly, Oct. 25, 1659; m. Moses Gerrish of Newbury, Sept. 24, 1677; d. Jan. 29, 1716-17.
6. *Ann*, b. at Newbury, N. E., Sept. 3, 1662; m. 1678, William Longfellow, who was drowned Oct., 1690; she had for a second husband Henry Short of Newbury, and died Dec. 18, 1706.
7. *Mehitable*, b. at Newbury, May 8, 1665; m. William Moody of Newbury; d. Aug. 8, 1702.
8. *Dorothy*, b. at Newbury, Oct. 29, 1668; m. 1st, Ezekiel Northend of Rowley, Sept. 10, 1691; 2nd, Dec. 23, 1732, Moses Bradstreet of Rowley, whose widow she died June 17, 1754.

About noon the party arrived at Dummer Academy, which is situated in a retired and shady spot at the intersection of several roads. This school was organized, in accordance with the will of its patron and founder, in 1763, during the provincial period of our history, under the direction of Samuel Moody,[4] the first Principal. Mr. Moody had previously been so successful as a teacher in his native town, York, Me., that twenty-eight pupils were present at the opening. For many years the number of scholars averaged over seventy, and it is inscribed upon his tombstone:—"He left no child to mourn his sudden death (for he died a bachelor), yet his numerous pupils in the United States will ever retain a lively sense of the sociability, industry, integrity and piety, he possessed in an uncommon degree; as well as the disinterested, zealous, faithful and useful manner in which he discharged the duties of the Academy for thirty years. He died at Exeter, Dec. 14, 1795, aged seventy."

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[4] William Moody,^{1} probably the ancestor of all the Moodys in this section of the country, came in 1634 (it was said a saddler) from Ipswich, Co. of Suffolk. He was first of Ipswich, afterwards in 1635 of Newbury, where he continued to reside. He died Oct. 25, 1673. He had three sons.

1. Rev. Joshua Moody,^{2} Harv. Coll., 1653, of Portsmouth and Boston; died July 4, 1697.

2. Caleb Moody,^{2} married 1st, Sarah Peirce; 2nd, Judith Bradbury. He died Aug. 25, 1698.

    Rev. Samuel Moody,^{3} son of the above Caleb, b. Jan. 4, 1676; Harv. Coll. 1697; of York Me.; died Nov. 13, 1747.

    Rev. Joseph Moody,^{4} son of Rev. Samuel, born in 1700; Harv. Coll. 1718; died Mar. 20, 1753, of York, Me.

    Rev. Samuel Moody,^{5} the preceptor of Dummer, son of the above Rev. Joseph.

3. Samuel Moody,^{2} married Mary Cutting Nov. 9, 1657; died April 4, 1675.

    William Moody,^{3} son of Samuel above, born June 20, 1663; married Mehitable Sewall Nov. 15, 1684 (see note on page 116); resided in Byfield; died Feb. 6, 1729–30.

    Deacon Samuel Moody^{4} of Newbury, son of the above William and Mehitable, born March 21. 1689; died May 25, 1767.

    Paul Moody^{5} of Newbury, son of the above Samuel, d. Dec. 30, 1822, aged 80; his widow Mary, d. March 10, 1825, aged 82.

    Paul Moody^{6} the distinguished mechanician, son of the above Paul and Mary, b. at Newbury, May 23, 1779; died at Lowell, July 7, 1831.

The school was not in session. Tables were spread on the green in front, beneath the trees, and a refreshing lunch was soon prepared.

At 2.30 P. M. the afternoon session was held in the study room of the Academy. The President in the chair.

The records of preceding meeting read.

The Secretary announced the following correspondence:—

From W. P. Andrews, May 15; D. M. Balch, May 15; Bureau of Education, Washington, June 23; E. P. Boon, New York, June 13, 28; Cornell University, June 28; Henry B. Dawson, Morrisania, N. Y., June 23; David B. Gould, May 31; Laighton & Brothers, Isle of Shoals, June 10; Charles Lawrence, Danvers, June 25; Joel Munsell, 'Albany, N. Y., June 22; W. D. Northend, June 24; C. L. Peirson, Boston, June; John Robinson, May 11; M. C. D. Silsbee, Boston, June; J. H. Stevens, June 26; James Upton, June 3, James S. Williams, May 27; Naturforschende Gesellschaft, Danrig, May 10; Historical Society of Pennsylvania, Philadelphia, May 19; K. K. Zoologische-botanische Gesellschaft.

The following additions to the library were reported:—

By Donation.

American Association for the Advancement of Science. Proceedings, at Hartford, Conn., Aug., 1874. 1 vol. 8vo.

Bolles, E. C. Theological Discussion. 1 vol. 12mo. The School. 1 vol. 12mo. Celestial Scenery. 1 vol. 12mo. The Ladies' Repository from 1839 to 1866.

Bolton, H. Carrington, of Columbia Coll., N. Y. Centennial of Chemistry, Aug. 1, 1874, at Northumberland, Pa. 4to pamph.

Bureau of Education, Washington. Circulars of Information, Nos. 1, 2, 1875.

Cabot, Mrs. J. S. Transactions of the American Pomological Society for 1860. 1 vol. 8vo. Agriculture of Mass. 1857. 1 vol. 8vo. Miscellaneous pamphlets, 72.

Cleveland, Mrs. W. S. Six Plans drawn by Jona. P. Saunders in 1837, of Acapulco Harbour, Coast of Africa. Low and Society Islands. Cathburts Bay, Is. of Tootoillo, Navigators Group. Sandwich Islands. Marquesas, or Washington Islands. Galapagos Islands.

Dallett, Gillies. Philadelphia Directories, 1844, 1847, 1849, 1851, 1852, 1853, 1855, 1857, 1861, 1862, 1863, 1864, 1870, 1871.

Gould, David B., of St. Louis, Mo. Directory of St. Louis, for years 1871, 1872, 1873, 1874, 1875. 5 vols. 8vo.

Green, S. A., of Boston. Boston Municipal Register, 1873. 1 vol. 8vo. Miscellaneous pamphlets, 25.

Lawrence, Chas., of Danvers, Mass. Moore's View in France, 2 vols. Fitzosborne's Letters, 1 vol. Gisborne on Christian Religion, 1 vol. Life and Labors of Dr. Worcester, 2 vols. Heydone's Tour, 2 vols. Life of Washington, 5 vols. Franklin's Sermons, 3 vols. Chalmer's Sermons, 1 vol. View in Italy, 1 vol. Life of P. Henry, 1 vol. Siege of Valencia, 1 vol. Notes on Travel, 1 vol. Sacred Biography, 3 vols. History of the Sandwich Islands, 1 vol. Garden Directory, 1 vol. Chapter on Flowers, 1 vol. Diseases of Animals, 1 vol. Barton's Poems, 1 vol. Mavor's Voyages, 17 vols. Book of Fruits, 1 vol. Treatise on Bees, 1 vol. Complete Farmer, 1 vol. Manual for Farmers, 1 vol. Memoir of Mrs. Hemans, 1 vol. Memoir of S. Green, 1 vol. Duflef's Dictionary, 3 vols.

Lee, John C. Commercial Bulletin, May 8, 15, 22, 29, June 5, 12. 19, 1875.

Loring, Geo. B. Agriculture of Mass.; by C. L. Flint. 1874–5. 1 vol. 8vo. Thirty-second Registration Report of Mass. 1 vol. 8vo. Sixth Annual Report of Mass. State Board of Health. 1 vol. 8vo. Eleventh Annual Report of Mass. State Board of Charities. 1 vol. 8vo. Sixth Annual Report of Mass. Board of Railroad Commissioners. 1 vol. 8vo.

Mass. Horticultural Society. Transactions of, for 1875. Part I.

Merriam, G. & C., of Springfield, Mass. Webster's Unabridged Dictionary. 1 vol. Royal 4to. 1875.

Office of the Chief of Engineers. Report upon the Reconnaissance of Northwestern Wyoming, 1873, by W. A. Jones.

Osgood, Chas. S. Legislative Documents for 1875. 4 vols. 8vo.

Phila. Zoological Society. Third Annual Report. 1875. 8vo pamph.

Putnam, F. W. Archæological Researches in Kentucky and Indiana. 1874. 8vo.

Rabardy, J. F. Manchester, Mass. The Beetle and Wedge. Feb. to June, 1875.

Stone, E. M., of Providence, R. I. Thirty-third Annual Report of the Ministry at Large. 1875. 8vo pamphlet.

Stone, Mrs. J. H. Masonic Monthly, 15 Nos. American Homes, 11 Nos. Hunt's Merchant Magazine, 55 Nos. Yankee Farmer, 1838, 1839, 1840, 1841. Miscellaneous pamphlets, 10.

U. S. Patent Office. Official Gazette for Apr. 20, 27. May 4, 11, 18, 25, 1875.

Williams, B. W. Lecture Bureau for 1875–6. 8vo pamph.

Young Men's Association of Buffalo. Thirty-ninth Annual Report. 8vo.

By Exchange.

Academie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique. Bulletins. Tome xxxv, xxxvi, xxxvii. 1873–4. 3 vols. Annuaire, 1874.

American Academy of Arts and Sciences. Proceedings. Vol. II. May, 1874, May, 1875.

American Philosophical Society. Proceedings. Vol. XIV. Jan., June, 1875.

Amherst College. Catalogue of Officers and Students for 1874–5. 8vo pamph.

Boston Society of Natural History. Proceedings, xiv to xvii. Memoirs, Vol. 2, pts. 1, 2, 3, and No. 1 of pt. IV.

Buffalo Society of Natural Sciences. Bulletin of. Vol. II, No. 4.

Crosse et Fischer. Journal de Conchyliologie. Tome xv. 3e Série, No. I, 1875.

Entomologische Zeitung, Stettin. Vol. for 1874. 1 vol. 12mo.

Geological Survey of India. Memoirs of. Vol. x, pt. 2, 1873. Vol. xi, pt. 1, 1874. Records of. Vol. vii, pt. 1-4, 1874. Palæontologia India. Vol. I, pt. I, 1874.

INSTITUT HISTORIQUE. L'Investigateur. Dec., 1874. Jan., Feb., 1875, 8vo.

INSTITUT NATIONAL GENEVOIS. Bulletin, Tome xx. 1875.

K. K. ZOOLOGISCH-BOTANISCHEN GESELLSCHAFT IN WIEN. Verhandlungen, Band xxiv, 1874. 1 vol.

KÖNIGLICHE GESELLSCHAFT DER WISSENSCHAFTEN GOTTENGEN. Nachrichten. 1874. 1 vol. 12mo.

MASS. HISTORICAL SOCIETY. Proceedings. 1873-1875. 1 vol., 8vo.

NATURFORSCHENDE GESELLSCHAFT, GOILITZ. Abhandlungen, Band xv, 1875.

NEW YORK LYCEUM OF NATURAL HISTORY. Annals. Vol. XI. Nos. 3, 4.

SOCIETE D'ACCLIMATATION, PARIS. Bulletin Mensuel. Tome I, 3me Serie. Nov., Dec., 1874. Tome II, 3me Serie. Jan., 1875. 3 pamphlets, 8vo.

SOCIETY D'ANTHROPOLOGIE, PARIS. Bulletins, Apr., June. 1874.

SOCIETE DES SCIENCES NATURELLES DU GRAND-DUCHE DE LUXEMBOURG. Publications, Tome XIV. 1874. Observations Meteorologiques faites a Luxembourg. Deuxieme vol. 1874.

SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES, LAUSANNE. Bulletin. Vol. xiii, No. 73. Dec., 1874.

VEREIN ZUR BEFÖRDERUNG DES GARTENBAUES BERLIN. Monatsschrift, Jahrg. xvii, 1874.

ZEITSCHRIFT FÜR DIE NATURWISSENSCHAFTEN IN BERLIN. July to Dec., 1874.

ZOOLOGISCHE GESELLSCHAFT, FRANKFURT. Zool. Garten. Vol. XV. No. 7-12.

PUBLISHERS. American Journal of Education. American Journal of Science and Arts. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Sailor's Magazine. Salem Gazette. Salem Observer. Salem Register. Salem Post. The European Mail. The Owl. Turner's Public Spirit.

The PRESIDENT then made a few preliminary remarks, describing the excursion from Newburyport to this place, and the historical localities visited. He also gave a brief biographical sketch of the Sewall family, on whose ancient domain at the factory they made a halt. He called upon Hon. William D. Northend of Salem, who was born in Byfield, and there had spent his early years, to give some account of Byfield, of Dummer Academy, the founder, the teachers and the alumni.

Hon. WILLIAM D. NORTHEND, in response, gave a very interesting sketch of Byfield and Dummer Academy. He remarked that the parish is a religious one, and at no time during the last century has it numbered over one hundred families; probably no place of its size, in the United States, can present such a record of notable men. Regarding them and the Academy he said:

Richard Dummer of Bishopstoke, Hants, England, son of John, born there in 1599, came to New England in 1632, and was among the first settlers in Newbury. He afterwards went to England, but returned in 1638 with his brothers Stephen and Thomas. He prospered and became a man of great wealth, and owned much land in this parish, including the grounds which this Academy now occupies; his sons Jeremiah, Richard, and Rev. Shubael held prominent positions in society; he died Dec. 14, 1679. His grandson, Jeremy Dummer, son of Jeremiah, was the agent of the colonies in England from 1710 to 1721, and advocated their claims with great ability. He is well known as the author of "a defence of New England Charters;" and a "letter concerning the expedition to Canada." He died May 19, 1739, aged 60.

Another grandson, a brother of Jeremy, William Dummer, was Lieut. Governor of the colony, and for a time was acting Governor; his administration was a wise one, and he was much respected by the people. His wife was Catherine, daughter of Gov. Joseph Dudley. He died *s. p.* 10 Oct., 1761, aged 84 years. This farm was his country seat, and the mansion to the right of the Academy was built by him after the old English style.

Henry Sewall, only son of Henry who followed him to New England, and died in Rowley, March, 1656–7, in the 81st year of his age, and grandson of Henry who was several times mayor of Coventry, was born in 1614, came to New England in 1634 plentifully supplied with money and English servants, neat cattle and provisions, and with other things suitable for the commencement of a plantation, removed to Newbury in 1635, where he became proprietor of a large tract of land known as the Highfields, at the Falls within this parish.

He married, March 25, 1646, Jane, eldest daughter of

Stephen Dummer. In 1646 he went to England, but returned in 1659, his family following in 1661, and resided in Newbury until his decease, which occurred May 16, 1700, at the age of 86 years. From this marriage came all the Sewalls in this part of the country. His son, Samuel Sewall, was Judge of the Supreme Court of the Massachusetts colony from 1692 to 1728, ten years of which he was Chief Justice; Stephen, son of his son Stephen, was Justice of the same court from 1739 to 1760, eight years of which he was Chief Justice; David, grandson of son John, was Justice of the same court from 1777 to 1790; Samuel, great-grandson of son Samuel, was Justice from 1800 to 1814, and the last year Chief Justice. Therefore from the descendants of Henry and Jane Sewall the Supreme Court of this state was furnished with Judges for eighty-two years, and Chief Justice nineteen years. It may be added that Judge David Sewall, named above, after his resignation was many years Judge of the U. S. District Court in Maine. Jonathan Sewall, likewise a nephew of Chief Justice Stephen, was Attorney General of Mass., 1767–75, and Jonathan and Stephen, sons of the above Jonathan, were respectively Chief Justice and Attorney General of the Province of Lower Canada. From the same family have been a large number of distinguished men of the clergy, especially in this state and Maine, and some in other professions of life. It is doubtful if any one family in the country has furnished a larger number of more distinguished men.

Henry Sewall, either by deed or bequest, gave these lands to three of his daughters; that portion adjoining the "Falls" to his daughter Mehitable, wife of William Moody. Many of the descendants of his grandfather, William Moody, the emigrant ancestor, were distinguished, among whom may be mentioned Paul Moody, the mechanician, who was one of the most influential persons in the building of the manufactories at Lowell, and Samuel Moody, the celebrated teacher of Dummer Academy. This estate has continued in the family until the present generation.

The portion known as "Highfields" was given to his daughter Anne, wife of William Longfellow. After his death she married Henry Short. She had children by both marriages. The Longfellows in the second generation purchased the share of the Shorts, and the farm was then divided between Stephen Longfellow and his sister Ann, who married Abraham Adams.[5] A large part of the Longfellows' portion has been and is now owned by descendants of the name. Joseph Longfellow is the present owner of a portion of it. Abraham Adams' share is now owned by his descendants, divided, however, into several farms. From William Longfellow has descended a man whose name need only to be spoken, Henry W. Longfellow, the poet. His great-grandfather was born in the house which was visited by you this morning. He emigrated to Maine in 1745. Stephen, the grandfather of Henry W. Longfellow, was a Judge of the Court of Common Pleas, and his father, Stephen, was a distinguished lawyer and member of Congress.

The third portion of the estate was given to his daughter Jane, wife of Moses Gerrish,[6] from whom was descended many persons of note. This portion of the original estate for the last two or three generations has been sold out of the family.

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[5] Capt. Abraham Adams, b. May 2, 1676; pub. to Anne Longfellow Nov. 13, 1703; d. April 8, 1763. Ann, his wife, d. Feb. 4, 1758, aged 74 yrs., 11 mo. He was the son of Serg. Abraham Adams, b. in the year 1639; m. Nov. 10, 1670, Mary Pettingill. He died June 14, 1714, aged 75. His wife Mary died Sept. 19, 1705. A grandson of Robert Adams, who with his wife Eleanor came to Ipswich in 1635, thence to Salem, 1638, finally settled in Newbury in 1640. He died Oct. 12, 1682, aged 81. His wife Eleanor d. June 12, 1677. His second wife, Sara, widow of Henry Short, whose maiden name was Glover, to whom he was married Feb. 6, 1678, d. Oct. 24, 1697.

Other lands in Newbury were given to his daughter Dorothy Northend,[7] and lands within the present limits of Newburyport to his daughter Hannah Tappan, probably where is now Tappan's lane. In this connection allusion has been made principally to the disposition of that portion of his estate lying in the parish of Byfield.

Mr. Northend then mentioned the names of several distinguished persons who were born, or had their residence, in this parish. The following may be specified.

Theophilus Parsons, the most distinguished jurist in Massachusetts; John S. Tenney, the late distinguished Chief Justice of the Supreme Court of Maine, was born in the Rowley part of this parish, as was also Samuel Tenney, a Judge of the Court of Common Pleas of New Hampshire; Samuel Webber, President of Harvard University; Prof. Eliphalet Pearson of Harvard and Andover, Prof. John Smith of Bangor Seminary, and Parker Cleaveland, the distinguished Professor at Bowdoin College, were all born within the limits of this parish. Here was also settled the distinguished political preacher, Rev. Dr. Elijah Parish, who in the war of 1812 fulminated against the acts of the General Government, and whose speeches were quoted in the famous discussions of Webster and Haynes.

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[6] Moses Gerrish, born May 9, 1656; m. Sept. 24, 1677, Jane Sewall; died Dec. 4, 1694, aged 38; resided in Newbury. His widow Jane d. Feb., 1716. He was a son of Capt. William Gerrish, who came from Bristol, England, about the year 1640, and settled at Newbury; m. April 17, 1645, Joanna, widow of John Oliver, and became the founder of a family which properly assumed a leading position in the colony. His brother Benjamin was a prominent citizen of Salem. See Hist. Coll. Essex Inst., vol. II, page 213, and vol. V, page 25. His brother Joseph was the third pastor of a church in Wenham; b. at Newbury, March 23, 1650; ord. Jan. 13, 1675; d. Jan. 6, 1720.

[7] For an account of the Northend Family see Hist. Coll. Essex Inst., vol. XII, p. 71.

[In addition to those of Byfield descent mentioned by Mr. Northend we would add the names of Rev. John P. Cleaveland, D. D., Hon. Albert Pike, the poet, lawyer, etc., of Little Rock, Ark., and Rev. Sewall Tenney, D. D., of Ellsworth, Me.

Mr. Charles Northend of New Britain, Conn., and Hon. William D. Northend of Salem, are lineal descendants of Ezekiel and Dorothy (Sewall) Northend, and many of the name of Tappan in New England are descendants of Jacob and Hannah (Sewall) Tappan.[8]—Eds.]

Dummer Academy was established by Gov. Dummer, who left for its endowment this farm of 400 acres, with the buildings upon the same. It first went into operation in 1763, and was the first institution of the kind in the state. The first teacher was the celebrated Samuel Moody, the Dr. Busby of America. Of those who attended his school, two were afterwards Presidents of colleges, nine were Professors, eleven were Judges of the Courts, nineteen were members of the House of Representatives at Washington, five were members of the U. S. Senate, one a member of the Cabinet, and one was minister to England.

Mr. Moody retired in 1790, and his successor was Rev. Isaac Smith, followed successively by Benjamin Allen, Rev. Abiel Abbott, Samuel Adams, Nehemiah Cleaveland and others. Among those who were under their tuition are enrolled many who have become eminent in the several professions and worthy members of society.

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[8] Jacob Tappan, born in 1644; m. Hannah Sewall Aug. 24, 1670, who died Nov. 12, 1699. He d. Dec. 18, 1717. He was son of Abraham Tappan, who came to Newbury in 1637, m. Susanna Goodale of Yarmouth, Eng., who d. March 20, 1689. He died Nov. 5, 1672, aged 64.

It is a matter of regret that this institution, so well situated for the education of youth, should have suffered so much from neglect, and it is to be hoped that efforts will be made to place it again in the position it held in the past.

Dr. **Jeremiah Spofford** spoke of the character of Dummer Academy, which he had known for seventy-five years. He had the honor of Dr. Parish's acquaintance, and had met Dr. Cleaveland in council. The former was a most forcible speaker, and a bitter enemy to the Democratic party. The latter had greater education than many about him who had greater practice, but he was too dignified for his position.

Mr. **Frederick W. Putnam** gave an account of the few zoological specimens he had collected about the grounds of the Academy, and in a small neighboring brook. He specially described the structure of the galls on the wild rose, and described the insects by which they were made. He also exhibited a colony of Polyzoa, of a species quite abundant on the stones in the brook, and described their different stages of growth, which were so fully illustrated by Prof. Hyatt several years since, in the Proceedings of the Institute.

Mr. **John Robinson** of Salem talked about the plants which he had collected, remarking that every one should know enough of botany to be able to distinguish the poisonous plants. Ivy and dogwood were the only ones in Essex County. With the latter he thought that few persons were acquainted. He then spoke of the fertilization of plants by insects, and made a few remarks on the growth of the fungi.

Mr. **Haydn Brown** of West Newbury said the influence of Dummer Academy is felt for miles around in the manners of the people. The past of the Academy was secure, but he doubted of the future. The days of private institutions were past, now that the state provides high schools of the same grade. He thought there were but few academies self-sustaining.

He then changed his subject and spoke of the insects that devour his crops. He thought that at least a quarter part of our crops of almost every kind was eaten up by these pests, and he suggested that the members of the Institute, and especially its naturalists, should turn their attention towards the discovery of some mode for the extermination of the insect pests.

The **President** said that it would facilitate Mr. Brown's crusade on noxious insects if local museums were established, and children become interested in collecting specimens, and studying the habits of the various plants and animals that are continually met with.

Amos Noyes, Esq., of Newburyport, considered the fact referred to by Mr. Brown, that academies were declining, was a sign of progress. We had outgrown them and they could not and should not compete with state schools.

Rev. Dr. **Samuel J. Spalding** of Newburyport, spoke of the Byfield Academy, which grew out of Dummer, and which sent out many eminent teachers, whose influence still pervade the schools of the country. He thought that private institutions were not in their decadence. Athens had no schools, but the responsibility of education was thrown on individuals, and what sages she produced. The state cannot do everything, as some would have it, regulate our meat and drink and hours of labor. Dummer Academy had lately adopted an improving element in the admission of girls, and there were no public institutions to-day for young ladies so good as private ones.

Dr. **Jeremiah Spofford** agreed with the last speaker that all the business of education should not be done by the state.

Messrs. **Putnam** and **Brown** here reopened the question of injurious insects. Mr. Putnam said that science was equal to the destruction of many kinds of insects that prey on the crops of the farmer, and if farmers would only work together they could exterminate their insect enemies. For instance, printer's ink is a sure exterminator of the canker worm. Printer's ink has exterminated many evils, and here was one more it could cope with, if all the farmers in a given section would apply it to their trees. Here was one case at least where the state should interfere and make a law requiring every man to assist in abating the canker worm nuisance who had a tree liable to be attacked by these insects.

Mr. **Brown** replied that he could take care of the canker worm and caterpillar, but he would give a gold medal to the man who would eradicate other insects which infest his farm.

On motion of Mr. **Putnam**:

Voted, That the thanks of the Institute be tendered to Mr. and Mrs. Ebenezer G. Parsons, the Principals of the Academy, for their courtesy and kindness so generously extended to the party during the day.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., SEPT. AND OCT., 1875. NOS. 9 & 10.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, WEDNESDAY, JULY 7, 1875.

THIS was an adjournment of the meeting held on Monday, July 5. PRESIDENT in the chair.

Mention was made that several members of the Institute and their friends chartered the new, safe, and commodious steamer "Governor Andrew," for an excursion which took place on Monday, June 14, from Salem harbor along the eastern coast to the Isles of Shoals, with a view to deep sea dredging and the collection of specimens of the marine fauna and flora of that group of Isles.

The steamer "Governor Andrew" is a new boat, built last year for the Boston and Hingham line, and is finely modelled and furnished, making one of the best excursion steamers in the waters of Massachusetts Bay. The weather was pleasant; the sail along the shore was very enjoyable, and the familiar scenery of the rock-bound and wooded coast, dotted here and there with the residences of the summer visitors, never looked more attractive. The boat stopped at Gloucester and took on board some twenty-five or thirty more of the party, and from there sailed direct to the islands, arriving about noon. The party landed at "Star Island," and was hospitably received by the proprietor, John A. Poor, Esq. Some two hours were pleasantly and profitably spent in examining the peculiar geological features, the fauna and the flora. The student in history also found much of interest. The monument erected to the memory of Capt. John Smith, recalled the scenes incident in the first part of the 17th century, when these islands were visited by Champlain, John Smith, and others of those early voyagers who navigated these seas before the landing of the Pilgrims at Plymouth. The old stone church, with the adjoining burial ground in the stony soil, and its many graves marked by rude stones, two of which were prominent, one in commemoration of Rev. John Tucke, A. M., died Aug. 12, 1773, aged 72, the other in memory of Rev. Josiah Stevens, died July 2, 1804, aged 64 (two of the old divines who Sunday after Sunday were wont to minister at the sacred desk to these people), marked another period in the history of these isles when in the occupancy of the hardy fishermen. Times have changed greatly within the last quarter of a century, and now they have become fashionable watering places, and on two of them, "Appledore" and "Star," have been erected large and commodious hotels, that are thronged with visitors during the heated term.

In recognition of the civilities and courtesies extended to the party during this excursion to the Isles of Shoals, it was, on motion of Mr. John Robinson:

Voted, That the cordial thanks of the members and friends of the Essex Institute who participated in the recent excursion to the Isles of Shoals are hereby presented to John A. Poor, Esq., of the "Oceanic" on Star Island, for his kindness in inviting the party to land at the island, and also for his various acts of courtesy shown to the excursionists during their stay.

Messrs. John M. Hagar of Salem and C. W. Kempton of Newburyport, were elected resident members.

Adjourned.

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FIELD MEETING AT CONCORD, TUESDAY, JULY 27, 1875.

THE third field meeting of the present season was held at Concord, this day, having been postponed from Friday on account of the rain. More than two hundred and fifty persons attended from Salem and vicinity, the unusually large number, eager to proceed to such an unwonted distance, evinced a lively continuation of the patriotic interest in this historic old town inspired by the events of the 19th of April, 1775, and freshly awakened by the commemoration of the present year.

An unfortunate delay in the arrival of the Bangor train at Salem diminished even the limited time of the stay at Concord, but the misfortune was partially remedied by the promptness of the Fitchburg Railroad officials in furnishing a special train to the excursionists immediately upon their arrival in Boston.

On reaching Concord the company rendezvoused at the elegant and unique Public Library building, the noble gift to the town from one of its citizens, Mr. William Munroe. It stands on a triangular plat at the junction of two streets and is a successful adaptation of the picturesque features of mediæval architecture to the requirements and mode of construction of the present day.

This place, with its collections, is worthy of a more thorough examination than the party was enabled to bestow. Here may be seen the busts of Plato, Agassiz, Emerson, Mann, Hawthorne, Brown, and Munroe, as well as several valuable historical relics. One alcove is devoted to the printed works of Concord authors from the settlement of the town to the present time.

From this point the company proceeded in groups to visit the various memorable places of this delightful old town. The citizens generally seemed to have put at the disposal of the visitors all their private vehicles, and themselves acted as guides and expositors. There was an outpouring of genial hospitality from first to last, that was thoroughly characteristic of the Concord people. Gentlemen of the highest reputation in State affairs and in literature devoted themselves to the entertainment of the strangers with an impartiality, earnestness, cordiality and assiduity which it was refreshing to witness, and the town officers united with the citizens generally to make the visit agreeable.

The first objective point was the old North Bridge, with its impressive surroundings, but we will not repeat the story so often rehearsed within the last few months. The newly erected statue of the minute man, designed by Daniel French, a young Concord artist, now in Italy, in Powers' studio, excited universal admiration, and is really one of the finest works in the country. An enhancement of the pleasure of those who were examining this sacred spot, and who could not help recalling the oft-repeated stanza:—

"By the rude bridge that arched the flood,
Their flag to April's breeze unfurled,
Here once the embattled farmers stood,
And fired the shot heard round the world:"

was the fact of the presence of the author of the immortal poem of which this verse forms a part. Here also at the bridge, marked by a rude headstone, lie the remains of British officers killed in action, and near by stands the monument erected some time since in honor of the American soldiers engaged in the Concord fight.

Several of the visitors found delightful recreation on Concord River in the neat and convenient pleasure boats which were freely placed at the disposal of the party. Messrs. Morse, Putnam and Bolles visited a shellheap some two miles up the river, obtaining interesting specimens of Indian relics.

Among the places interesting to Salem people, because of their connection with their townsman, Hawthorne, was the old Manse, which is in the near vicinity of the North Bridge. Here Hawthorne resided for several years. Now, as he described it long ago, between two tall gateposts of rough-hewn stone, we behold the gray front of the old parsonage, terminating the vista of an avenue of black ash trees. It was built by the grandfather of Ralph Waldo Emerson, and its last inhabitant before Hawthorne occupied it was the venerable Parson Ripley, who had died about a twelvemonth before. It was from the study window facing the river that the clergyman, who then dwelt in the manse, stood watching the outbreak of a long and deadly struggle between two nations; he saw the irregular array of his parishioners on the farther side of the river, and the glittering line of the British on the hither bank; he awaited, in an agony of suspense, the rattling of the musketry. It came; and there needed but a gentle wind to sweep the battle smoke around this quiet house. Hawthorne says that the old manse had never been profaned by a lay occupant, until that memorable summer afternoon when he entered it as his home, in 1842. A priest had built it; a priest had succeeded to it; other priestly men had, from time to time, dwelt in it; and children born in its chambers, had grown up to assume the priestly character. The latest inhabitant alone had penned in it nearly three thousand discourses, besides the better, if not the greater number, that had flowed living from his lips. Here Emerson wrote "Nature," and here Hawthorne sojourned, sending forth his "Mosses from the Old Manse" with the declaration:

"For myself the book will always retain one charm, as reminding me of the river, with its delightful solitudes, and of the avenue, the garden and the orchard, and especially the dear Old Manse, with the little study on its western side, and the sunshine glimmering through the willow branches, while I wrote."

The Old Manse is now the residence of Judge Ripley, who gave the visitors a kindly welcome.

We must pass over the visits to other places connected with the memory of Hawthorne, his later residence, his walk on the Ridge Path, and his grave; the home and haunts of Thoreau, the poet-naturalist, whose favorite Walden Pond, around whose borders he studied nature so closely and of which he wrote so delightfully, was passed on the way, and was the scene of a gay picnic party, who probably little thought of the man who had so often wandered on its former quiet banks; and of the many other objects of interest, which crowded a day which will be remembered with delight.

The dinner was spread in the vestry of the First Church, and here the ladies of Concord took the entire charge of the preparations, with a lavishness altogether opposed to the simple requirements of the Institute. The Concord ladies added largely to the ordinary refreshments, laid and decked the tables in a refreshing and tempting style, while many of the younger portion constituted themselves fair waiting maids, and dispensed the viands with a grace and dexterity that added charm to the feast.

The afternoon session was held in the Town Hall, and was attended by a large audience, including Judge E. R. Hoar, Ralph Waldo Emerson, the venerable A. Bronson Alcott, Wm. W. Wheildon, and many others, including Concord's wisest and best and fairest citizens.

The PRESIDENT of the Institute called to order, and in his introductory remarks stated that this was the fourth field meeting held beyond the limits of Essex county; of these, one was at Wakefield, and another at Reading; as those towns were settled by Lynn people and were known as Lynn village, they probably at one period may have been considered as a part of Essex county, until the lines between Essex and Middlesex were adjusted. The third was at Kittery, Me., the residence of Sir William Pepperell, who was connected by marriage with some of our old Salem families. It was appropriate that the Institute should visit Concord, for several reasons. In the first place, to see the grave of a distinguished son of Salem, which is marked by two small, white marble stones, with the simple inscription "Hawthorne," of whose ancestry and birthplace a brief sketch was then given.[1]

Secondly, it was fitting for the association to visit the town to which the Legislature adjourned from Salem in October, 1774, after having resolved itself into a Provincial Congress and assumed the powers of sovereignty, which event was duly commemorated by the Essex Institute, with an address from A. C. Goodell, Jr., Esq., on the 5th of October last, at the Institute rooms.[2]

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[1] See Bulletin of Essex Institute, vol. 3, page 25, for a communication on "The Ancestry and Birthplace of Hawthorne."

The President next alluded to Concord as the home of Thoreau,[3] the poet-naturalist, who had done so much to make us acquainted with the fauna and flora of Concord by his writings. It is, likewise, the place where was originated some two hundred years ago the famous Hunt's russet apple;[4] and also, more recently, the widely known Concord grape so extensively and generally cultivated.

The President closed his remarks by briefly sketching the history and objects of the Institute, which is the usual custom at meetings held in a new locality.

Judge E. R. HOAR then came forward, and in behalf of his townsmen gave the members of the Institute a cordial welcome to Concord. He felt he but expressed the feelings of the people of the town when he said he was very glad to see them. The Judge continued in a humorous strain which elicited much laughter and applause. He alluded to their researches on and around the sluggish river, and to Hawthorne's declaration that it was the only river he ever knew that was too lazy to keep itself clean. His father, the Judge said, had a different idea. He thought the river hated to leave Concord! In illustration of the ignorance of many people on the subject of natural history, he repeated a story told to him by Thomas Hughes, author of "School-days at Rugby," "Tom Brown at Oxford," and other popular books, when he was visiting at Concord. It was at the expense of one of the railroad guards of an English train. A lady in the same carriage with him had a pet rabbit, and the guard protested that the passenger car was not a proper place for it; whereupon a gentleman drew from his pocket a turtle, saying that he, the guard, would not think of ejecting that, and that the rabbit had as much right there as the turtle. The guard went to headquarters to determine the question, and returning said, "cats is dogs, and rabbits is dogs, and they must go in the baggage van; but turtles is insects, and they go free; and rabbits must pay." The Judge remarked that that was the only lesson that he ever received in natural history. He also alluded to the rivalry between the North Bridge at Salem and that at Concord, and claimed that the latter had at least the substantial fact of the graves of two British soldiers killed there. He further referred to Hawthorne, spoke of the important objects of the Institute, and concluded, as he began, by saying that he was glad to welcome the members to Concord.

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[2] For an account and the address see Bulletin of Essex Institute, Vol. 6, page 160, The address is printed in full in the Historical Collections of the Essex Institute. vol. xiii, page 1.

[3] Henry David Thoreau, b. July 12, 1817, gr. Harv. Univ. 1837, d. May 6, 1862, dedicated his genius with such entire love to the fields, hills and waters of this town that he made them known and interesting to the reading public. The river on whose banks he lived, he knew from its springs to its confluence with the Merrimack.

[4] The Hunt russet apple, a good and desirable variety, is said to have originated on the Hunt farm, in Concord, located about one mile north of the village, on the south side of "Puntakasset" Hill, overlooking the old North Bridge of Revolutionary fame.

Prof. E. S. Morse was called upon for an account of his trip on the river. He said he had found plenty of heat, but very little else, as his time on the river had been very limited. He had been thinking what he should take for a subject, if called upon to make any remarks, and Judge Hoar's story of the tortoise had suggested the subject of turtles. It was astonishing to an Englishman to see the great number of turtles in this country; in England they are very rare. He proceeded to speak of the similarity between the embryos of turtles and those of birds. No two families of vertebrates seemed to be more widely dissimilar in their development, yet there was a similarity almost amounting to identity in their embryonic forms. He illustrated this fact, and the gradual changes which result in the differences between them when they emerge from the eggs, by drawings on the blackboard, and briefly alluded to the points of similarity which are evident to a naturalist. To further illustrate this similarity he described a fossil skeleton found in Germany, which combined the wings and feathers of the bird with the vertebral development and teeth of the reptile. In closing, he alluded with great respect and admiration to the labors of Thoreau in Concord, to which the naturalists of the vicinity owe so much, and during further remarks announced himself a believer in the theory of Darwin.

Vice President F. W. **PUTNAM** gave an interesting account of his visit to the Indian shellheap on the river, from which Thoreau made the valuable collection of relics, now under his own charge at the archæological Museum at Cambridge. He was glad to have seen the place where Thoreau and Wyman had collected the relics alluded to. He also exhibited and commented upon about a dozen stone implements, of the shape of arrowheads, which had been picked up there, some of which were evidently intended for knives rather than arrow or spearheads, and gave a general account of the composition and formation of the shellheaps found on both coasts of America, on many of our river banks, and in nearly all other parts of the world.

Prof. **MORSE**, in answer to a question from Mr. Wheildon, explained how the ballooning spiders were suspended in the air.

Rev. E. C. Bolles, of Salem, in some eloquent remarks, spoke of the microscopic forms of life to be found in Concord River, illustrating upon the blackboard, and explaining some of the wonders of the simplest forms and modes of growth of animal life.

Judge Hoar called attention to the importance of accurate observation, and to the difference between the observer of facts and mere theorists, illustrating his point by a pertinent law case which once came before him. It was the trial of a man for robbery. A farm house had been entered in the night, the door of the sleeping room secured so that the occupants could not get out, a lamp lit, and a desk rifled of quite a large sum of money. Suspicion rested on a man who had formerly worked on the farm, and it was brought out in evidence that at about that time he was seen to have a good deal of money, and the tracks about the farm house, the morning after the robbery, were made by a shoe the size of his, but all the evidence was circumstantial, and Judge Hoar on the bench and the jury in their box all thought that the government would fail to convict the prisoner. At last the government attorney called a neighbor who had visited the house on the morning after the larceny, and asked him if he found anything upon the floor of the room where the lamp had been lit. Yes, he had found a match about half burnt, evidently thrown down by the person who lit the lamp. Turning to the officer who arrested the prisoner, he enquired what he had found on his person when arrested, and among other things the officer produced half a card of matches. Taking the burnt match found upon the floor, and the half card found upon the prisoner, the government attorney showed the court and jury that the burnt match had manifestly been split from the card in the prisoner's possession, as they fitted so exactly, and the grain of the wood ran in such a manner that there could be no doubt whatever in regard to the matter, and the man was found guilty of the robbery.

The Rev. GRINDALL REYNOLDS of Concord, alluded to some of the historic facts of the Revolution and of the similarity of events at the North Bridge in Concord, and the North Bridge in Salem. He also spoke of the value of such gatherings as the present, in the diffusion of knowledge combined with the pleasures of a summer's day picnic.

Prof. D. B. HAGAR, of Salem, after some highly complimentary remarks on the reception given by citizens of Concord to the Institute party, which were endorsed by the President and the entire company of visitors, offered the following resolutions, which were unanimously adopted :—

Resolved, That the hearty thanks of the Essex Institute are hereby presented to the selectmen of Concord, for the courteous invitation extended to the Institute to meet in this place, and for the free use of their Town Hall; to the authorities of the First Church for the accommodations kindly afforded by them; and to the ladies and gentlemen of Concord who have contributed so hospitably and abundantly to the entertainment of the Institute.

Resolved, That the Institute will hold in grateful remembrance the field meeting at Concord as one of the most delightful and profitable in all its history.

Resolved, That the thanks of the Institute are due to the officers of the Eastern and the Boston & Lowell Railroads for kind attentions, and to C. L. Heywood and John Adams of the Fitchburg Railroad, for their readiness in furnishing a special train for the party to Concord and for other courtesies.

At half-past five the meeting was closed and the company returned to Boston over the Lexington branch and Lowell roads, reaching Salem about eight o'clock, after one of the most interesting and delightful excursions ever participated in by the Institute.

Adjourned.

* * *

Regular Meeting, Monday, August 2, 1875.

Regular meeting this evening. The President in the chair. Records read.

The Secretary announced the following correspondence:—

From S. P. Boynton, Lynn, July 21; Boston Soc. Nat. Hist., July 17; Buffalo Hist. Soc., July 12; John J. Babson, Gloucester, July 9; Edward Cogan, Brooklyn, N. Y.; Concord, Selectmen of, July 12, 19, 23; Globe Publishing Co., Boston, July 19; Henry M. Greenough, Newburyport, July 7; D. B. Hagar, July 15; Charles W. Kempton, Newburyport, July 8; Kjobenhavn, K. Danske Videnskab. Selskab, June 29; Lowell Bleachery, July 9; New Jersey Hist. Soc., July 13; New York Hist. Soc., July 12; Ohio Hist. and Phil. Soc., July 13; Abner J. Phipps, Boston, July 3; John R. Poor, Boston, July 29; G. Reynolds, Concord, July 17; Royal Polytechnic Soc., Cornwall, July 12; Rhode Island Hist. Soc., July 12; Royal Soc. of Tasmania, July 23, 1874.

The Librarian reported the following additions:—

By Donation.

Dudley, Dean. Directories:— Plymouth and Barnstable Counties, 1873-4; Hyde Park, Dedham and Canton, 1874; Quincy, Weymouth and Braintree, 1873-4; Cambridge, 1872; Brookline, Jamaica Plain and West Roxbury, 1873-4, 1 vol.; Concord, 1874-5; Dover, Great Falls and Rochester, 1874; Beverly, Peabody and Marblehead, 1875.

Fearing, A. G., of Boston. Programmes, etc., of the Bunker Hill Monument Association. June 17, 1875.

Folger, W. C., of Nantucket. Miscellaneous Town Reports, 10.

Gates, Geo. S., Groton. Catalogue of the Groton Public Library.

Green, S. A., Boston. Miscellaneous pamphlets, 21.

Hartranft, J. F., of Philadelphia, Penn. Pennsylvania Archives, Second Series, Vol. I, 1874.

Kimball, James. Cape Ann Advertiser, May to July. Proceedings of the Mass. Council of Deliberation held in Boston, June 30, 1874. 8vo pamph.

Munsell, Joel, Albany, N, Y. Miscellaneous pamphlets, 31.

Putnam, F. W. Geological Survey of Missouri, by G. Broadhead. Vol. I, 1873-4.

Valentine, Mrs. Friend's Review. 1859 to 1874. Miscellaneous pamphlets, 25.

By Exchange.

Boston Society of Natural History. Proceedings. Vol. XVII. Dec., 1874, Feb. 1875.

New York Chamber of Commerce. Annual Report, 1874-75.

N. E. Historic-Genealogical Society. Register. July, 1875.

N. Y. Genealogical and Biographical Society. Record. July, 1875.

Phila. Academy of Natural Sciences. Proceedings. Jan. to Apr., 1875.

Yale College. Obituary Record of Graduates. 1875. Yale College in 1875.

Publishers. American Journal of Science. Beetle and Wedge. Boston Daily Globe. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Post. Salem Gazette. Salem Observer. Salem Register. Turner's Public Spirit.

George W. Cressy and Dorcas C. Nourse of Salem were elected resident members.

REGULAR MEETING, MONDAY, SEPT. 6, 1875.

Meeting this evening. The **PRESIDENT** in the chair. Records read.

The **SECRETARY** announced the following correspondence:—

From American Numis. and Archæol. Soc., Aug. 10; Bureau of Education, Washington, Aug. 26; Bristol Naturalists' Soc., Aug. 12; C. H. Dall, Boston, Aug. 7; London Soc. of Antiquaries, Aug. 4; Lisbon Royal Acad. Sci., July 30; Salem Young Men's Union, Aug. 16; W. Hudson Stephens, Lowville, Aug. 26; W. Wheeler, West Roxbury, Aug. 16.

The following additions to the library were reported:—

By Donation.

Baker, C. H., Annapolis, Md. Papers and Proceedings of the U. S. Naval Institute. Vol. I. 1874.

Butler, B. F. Message and Documents, 1874-75. Abridgement. 1 vol.

Conant, W. P., West Newbury. Missionary Magazine, 1807. Locomotion by A. Gordan. Georgia Claims.

Cox, E. T., Indianapolis, Ind. Geological Survey of Indiana, 1874.

Crowell, E. P., of Amherst. Triennial Catalogue of Amherst College, 1875.

GARFIELD, E. I., Detroit, Mich. Report of the Controller of Detroit, year ending Jan. 31, 1875.

LEE, JOHN C. Commercial Bulletin, July and August, 1875.

MARSH, O. C., New Haven, Conn. Statement of affairs at Red Cloud Agency, made to the President of the U. S.

MERRITT, L. F. Essex County Mercury, April to August, 1875.

OLIVER, H. K. Report of the Connecticut Board of Education, 1873. School Report of Michigan, 1872. Penn. Report of the Institute of Mines, 1870. Report of the Department of Agriculture, 1863. Report on American Fisheries. Smithsonian Report, 1862. Transactions Mass. Agricultural Society, 3 vols. Agriculture of Mass., ten years. U. S. Coast Survey, 1832. Worcester's Gazetteer, 2 vols. Memoir of Ebenezer Bailey. Memoir of Solomon Willard. Mass. State Board of Charities, 1867, 1870–1, 1873–4. Registration Report, 1873. Auditor's Report, 1864. Report of the State Board of Health, 1871. Agriculture of Maine, 1865, 1866, 1867. The Art of Singing, 2 vols. National Lyric, 1 vol. Miscellaneous pamphlets, 64.

PATCH, GEO. W., Marblehead. Registration Reports, 1858 to 1872, 15 vols. Board of State Charities, 1865 to 1873, 7 vols. Report of the State Board of Health, 1870 to 1874, 4 vols. Journal of the Mass. House of Reps., 1865, 1866, 2 vols. Census of Boston, 1845. Industry of Mass., 1865. Census of Mass., 1860, 1865, 2 vols. 8vo. Report of Mass. Board of Education, 1859 to 1872, 14 vols. Animal Magnetism, 1 vol. The Psalmist, 1 vol. Railroad Returns, 1863 to 1872, 10 vols. Journal of the Mass. Convention, 1853, 1 vol. Patent Office Reports, 1853, 1855, 1856, 1860, 1861, 5 vols. Report on Ship Canal, 1864, 1 vol. Logic and Utility of Mathematics, 1 vol. Reeves' Bible History, 1 vol. Vocal Culture, 1 vol. Polyglott Bible, 1 vol. New Testament, 1 vol. Vindication of the Government of N. E. Churches, 1 vol. Sacred Lyre, 1 vol. Bible News, 1 vol. Manual of the General Court, 1856 to 1873. Miscellaneous pamphlets, 850.

QUINT, A. H., New Bedford. Minutes of the General Association of Mass., 1875.

U. S. PATENT OFFICE. Official Gazette, June 15, 22, July 6, 13, 20, 27, Aug. 3, 10.

By Exchange.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Memoirs, No. I.

ARCHIV DER ANTHROPOLOGIE, Paris. Band VIII. Apr., 1875.

BRISTOL NATURALISTS' SOCIETY. Proceedings. New Series, Vol. I, pt. II, 1874–5.

CROSSE ET FISCHER. Journal de Conchyliologie. 3e Série, Tome xv. No. 2, 1875.

INSTITUT HISTORIQUE, Paris. L'Investigateur. Mars-Avril, 1875.

NATURWISSENSCHAFTLICHEN GESELLSCHAFT "ISIS" DRESDEN. Sitzungs-Berichte, Jahrg. 1874, Oct., Dec.

NATURWISSENSCHAFTLICHEN VEREINE ZU BREMEN. Abhandlungen, Bd. IV, Heft 2, 3. 1874–5. 8vo. Beilage, No. IV, 1874. 4to.

N. Y. LYCEUM OF NATURAL HISTORY. Annals. Vol. xi. Nos. 5–6. 1875.

ROYAL SOCIETY OF TASMANIA. Monthly Notices for 1873.

SOCIÉTÉ D'ACCLIMATATION, Paris. Bulletin Mensuel, 3me Série. Tome II, No. II, 1875.

SOCIÉTÉ D'AGRICULTURE, SCIENCES ET ARTS DE LA SARTHE, LE MANS, France. Bulletins. Tome xxiii, 1875.

SOCIÉTÉ D'ANTHROPOLOGIE, Paris. Bulletins, Tome ix, 2e Serie. Juin-Juillet, 1874. Tome x, 2e Series. Jan-Mars, 1875.

WESTERN RESERVE AND NORTHERN OHIO HISTORICAL SOCIETY. Cleveland Directories, 1845 to 1871. Miscellaneous pamphlets, 6.

PUBLISHERS. American Journal of Science. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill

Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Observer. Salem Post. Salem Register. The Western. Turner's Public Spirit.

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REGULAR MEETING, MONDAY, SEPTEMBER 20, 1875.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Records read.

Ellen B. Kelman was elected a resident member. William De Roux of Panama, and Charles P. Perkins, U. S. N., Annapolis, Md., were elected corresponding members.

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ADJOURNMENT OF QUARTERLY MEETING, MONDAY, OCTOBER 4, 1875.

THE adjournment of the August Quarterly Meeting was held this evening. Vice President F. W. PUTNAM in the chair.

On the motion of Rev. E. C. BOLLES the Constitution and By-laws proposed at the Quarterly Meeting in February, and at the Annual Meeting in May, were adopted after a discussion by Messrs. A. H. Johnson, D. B. Hagar, E. C. Bolles, John Robinson, W. D. Northend and C. H. Higbee.

Adjourned to meet on Monday, Oct. 11, at 7.30 P. M.

The REGULAR MEETING was held immediately after the adjournment of the Quarterly. Records read; and the correspondence was announced by the Secretary:

From Belfast Naturalists' Field Club, Sept. 6; Charles Cadman, Detroit, Mich., Sept. 2; S. A. Drake, Boston, Sept. 22; J. W. Hawes, New York, Sept. 6; J. C.

Holmes, Detroit, Mich., Sept. 24; O. A. Jenison, Lansing, Mich., Sept. 6; Rufus King, New York, Sept. 23; G. W. Patch, Marblehead, Sept. 8; W. Hudson Stephens, Grand Rapids, Mich., Sept. 23; Charles A. Walker, Chelsea, Sept. 16; Western Reserve Historical Society, Sept. 14, 17; W. Wheeler, West Roxbury, Sept. 7; W. C. Wood, Wenham, Sept. 22.

The LIBRARIAN reported the following additions to the Library: —

By Donation.

AIKIN, EDWARD, East Saginaw, Mich. East Saginaw and Saginaw City Directories, 1868–9, 1870–1.

CITY OF SALEM. Centennial Exercises, Feb. 26, 1875.

KIMBALL, JAMES. Cape Ann Advertiser, July, Aug., Sept.

PUTNAM, F. W. N. Y. Tribune, July to Sept.

RANTOUL, HANNAH, of Beverly, Mass. Memoires de Sully, 3 vols., 12mo. L'Observation, 2 vols. Fordyce's Addresses, 1 vol. Hebrew Grammar, 1 vol. Apocryphal Testament, 1 vol. Modern Materialism, 1 vol. Religious Creed and Statements, 1 vol. Conn. Evangelical Mag., 1 vol. Historie des Revolutions Romaines, 4 vols. Bielky's Evidences, 1 vol. Moscow, 1 vol. Miscellaneous pamphlets, 107.

SPENCE, F. A. Annual Report of the President of Brown University, July 17, 1875. 8vo.

U. S. PATENT OFFICE. Official Gazette, Aug. 17, 31, 1875.

By Exchange.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings. Vol. xvii, pt. iv, Feb., April, 1875. 8vo.

PUBLISHERS. American Naturalist. Beetle and Wedge. Boston Daily Globe. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Post. Salem Observer. Salem Register.

BY ADDITION. Documents, U. S. Cong., 1st Sess., 30 Cong., 4 vols.; 1st Sess., 32 Cong., 13 vols.; 2nd Sess., 32 Cong., 8 vols.; 1st Sess., 33 Cong., 5 vols. Directories, Concord, 1870; Cambridge, 1868; Lowell, 1870; Bangor, 1871-2; Nashua, 1868–9; Dover and Great Falls, 1869; Somerville, Arlington and Belmont, 1869–70; Haverhill and Bradford, 1869–70, 1872, 2 vols.; Rockland, Belfast, Camden and Thomaston, 1868; Metropolitan Business Directory, 1869, 1870, 2 vols; Waltham and Watertown, 1869–70.

Mr. AUGUSTUS S. BROWN presented a bud of the banana plant from St. Augustine, Florida.

Mr. JOHN ROBINSON gave a description of the plant, illustrating his remarks with the bud presented and with a stalk and leaf from his greenhouse, and by diagrams on the blackboard.

Prof. E. S. MORSE spoke of his recent researches at

Grand Menan, and described some points in the embryology of several species of birds.

Mr. **James Kimball** presented from Capt. J. J. Coker a specimen of Hippocampus sp., which formed the subject of remarks by the chairman.

Eva M. Davis of Salem was elected a resident member.

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ADJOURNED QUARTERLY MEETING, MONDAY, OCTOBER 11, 1875.

Meeting this evening at 7.30 o'clock. Vice President **Putnam** in the chair.

On motion of Mr. **John Robinson**:

Voted, To proceed to the election of officers and that a committee be appointed by the chair to nominate a list.

Messrs. W. P. Upham, E. S. Atwood and John Robinson were appointed as the committee.

The following list was reported and the persons named were elected:

President: Henry Wheatland.

Vice Presidents: Abner C. Goodell, Jr., Frederick W. Putnam, William Sutton, Daniel B. Hagar.

Secretary: George M. Whipple.

Treasurer: Henry M. Brooks.

Auditor: Richard C. Manning.

Librarian: William P. Upham.

Curators: History, James Kimball; Manuscripts, William P. Upham; Archæology, Frederick W. Putnam; Numismatics, Matthew A. Stickney; Geology, Alpheus

S. Packard, Jr.; Botany, John Robinson; Zoology, E. S. Morse; Horticulture, Caleb Cooke; Music, Charles H. Higbee; Painting and Sculpture, Thomas F. Hunt; Technology, Edwin C. Bolles.

Committees: Finance, John C. Lee, James Upton, James B. Curwen, James O. Safford; Library, Joseph G. Waters, Henry F. King, George F. Flint, Amos H. Johnson; Publication, Abner C. Goodell, Jr.; Edward S. Atwood, William P. Upham; Lectures, Charles H. Higbee, Edwin C. Bolles, William D. Northend; Field Meeting, George M. Whipple, Allen W. Dodge, James R. Nichols, George D. Phippen, Francis H. Appleton, Amos Noyes, Francis H. Johnson, Amos H. Johnson, George Perkins.

Rev. Charles Arey of Salem, was elected a resident member.

Mr. JOHN ROBINSON presented the following

ADDENDA TO THE FERNS OF ESSEX COUNTY.

(Bulletin E. I., Vol. VII, No. 3, March, 1875.)

10 A. WOODWARDIA ANGUSTIFOLIA Smith.

Dr. Charles Pickering informs me that Mr. Wm. Oakes, in a letter written some forty years ago, speaks of finding this species while botanizing. The locality, Dr. Pickering was quite certain, was in Essex Co., probably at Danvers.

25 A. PHEGOPTERIS HEXAGONOPTERA Fée.

Fine specimens of this species were found by Mrs. Horner at Georgetown, Sept., 1875 (see herb. Essex Co. at P. A. S).

Thus two species are added to the County ferns from the list in the first paper indicating possible inhabitants.

Among the possible inhabitants see No. 5, B. simplex, from Long Island, N. Y. This will probably prove to be a mistake, and should be No. 6, B. matricariæfolium.

Mr. Frank Lufkin of Rockport has sent me LYCOPO-

DIUM CLAVATUM, L. ANNOTINUM and L. LUCIDULUM from that town, species not common in the County, and not *reported* previously from that quarter.[5]

I have found EQUISETUM HYEMALE at Methuen and Boxford during the past season.

While dredging for animals and plants in Wenham, Pleasant and Chebacco ponds, during July and August, 1875, I collected among the Cryptogamous plants the following:

ISOETES ECHINOSPORA Durieu var. BRAUNII. In shallow water at Pleasant pond. (The first species of Isoetes yet *reported* in the County; doubtless others are to be found.

Characeæ (2 gen., 6 species) (named by Mr. C. C. Frost, of Brattleboro, Vt.).

CHARA CORONATA var. SCHWEINITZII. Wenham pond, abundant.

CHARA GYMNOPUS var. ELEGANS A. Br. Pleasant pond, Wenham, "new to New England."

CHARA VULGARIS L. (C. fœtida of authors). Pleasant pond, Wenham, common.

NITELLA GRACILIS Agh. Chebacco pond, abundant.

NITELLA FLEXILIS Agh. Wenham pond.

——— ———? "Unknown to me, perhaps new to this region." C. C. Frost.

Any local county lists or notes on the plants of the county will be gladly received.

Capt. SAUNDERS, of Orlando, Me., presented to the Institute a vampire, several snakes, and a very curious bone belonging to the dorsal fin of a fish, which were remarked upon by the chairman.

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[5] Since the above was communicated, and just as this goes to press (May, 1878), I also found these species in Beverly.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., NOV. AND DEC., 1875. NOS. 11 & 12.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, OCTOBER 18, 1875.

MEETING this evening. Vice President **F. W. PUTNAM** in the chair. Records read.

Dr. **GEORGE A. PERKINS** exhibited some curious specimens of coal and charcoal; also beautiful impressions of ferns in coal and stone, and made some remarks on the subject. The chairman continued the subject, and spoke on coal deposits in this country, and of the fossil remains of fish found in several carboniferous deposits.

Mr. **WILLIAM P. UPHAM** read an interesting paper relating to the settlement of Rev. Samuel Skelton, minister of the First Church in Salem. He also called attention to the value of old letters and papers, and the importance of their preservation. The paper was referred to the publication committee for insertion in the "Historical Collections."

Mr. KIMBALL exhibited plaster casts of two very curious utensils supposed to have been made by the Indians and described the way in which they were probably made and the conditions under which the original specimens had been found. One was supposed to be a part of a large mortar and the other a cooking vessel. The chairman made some statements of his researches among Indian relics, explanatory of the casts on exhibition.

Mr. C. H. HIGBEE laid on the table for examination some specimens of minerals which he had collected, and gave a brief description of them. This led to a discussion of the minerals of this county, particularly of those found in the region of Newbury, and which have recently excited great interest, Messrs. Higbee, Kimball, Putnam and others taking part.

* * *

REGULAR MEETING, MONDAY, NOVEMBER 1, 1875.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Records of last meeting read.

The SECRETARY announced the following correspondence:—

From Francis H. Appleton, Boston, Oct. 19; Charles Arey, Salem, Oct. 19; Helen F. Ayres, Boston, Oct. 19; S. L. Boardman, Augusta, Me., Oct. 5; E. P. Boon, New York, Oct. 26; John J. Bagley, Detroit, Mich., Oct. 17; Fidelia Bridges, Brooklyn, N. Y., Oct. 18; James B. Curwen, Salem, Oct. 13; J. Edmonds Clarke, Washington, D. C., Oct. 28; Samuel A. Drake, Boston, Oct. 5, 7; John Ward Dean, Boston, Oct. 5; J. P. Felton, Salem, Oct. 27; S. A. Green, Boston, Oct. 13; F. B. Hough, Washington, Oct. 2; Rufus King, New York, Oct. 16; H. M. Knowlton, Boston, Oct. ; Lynn Public Library, Oct. 29; I. P. Langworthy, Boston, Oct. 9; Michigan State Library, Oct. 9; Michigan State Geological Survey, Oct. 27; Amos Noyes, Newburyport, Oct. 16; George Peabody, Salem, Oct. 30; Richard A. Proctor, Boston, Oct. 21; E. P. Robinson, Saugus, Oct. 6, 11; W. Hudson Stephens, Lowville, N. Y., Oct. 13; Smithsonian Institution, Oct. 12; Joseph G. Waters, Salem, Oct. 13; Justin Winsor, Boston, Oct. 15.

Prof. A. **Graham Bell** gave a very interesting lecture on the system of "visible speech" invented by his father, illustrated by charts of the symbols representing the various sounds, and by practical examples of the value of the system in teaching deaf mutes to speak, as tested by the ability of a young pupil from the Boston Institution to interpret the symbols at sight. The exposition of the value of the system, both in its linguistic and educational aspects, was listened to with intense interest, and the tests were eminently satisfactory.

After the close of the lecture a conversation followed between Rev. E. B. Willson, the lecturer, and others, in which several questions were proposed and answered. A vote of thanks was then passed to Mr. Bell for the evening's instruction.

Edward J. Johnson of Nahant was elected a resident member.

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The Second Art Exhibition

Opened on Tuesday, Nov. 9, at the rooms of the Institute, Plummer Hall, and closed Wednesday the 17th. About twelve hundred persons visited the exhibition, not including members of the Institute and contributors. The main hall was devoted to the display of oil paintings, water colors, pen and ink and pencil sketches. The collection of portraits of persons prominent in Salem history attracted much attention, and among them were represented the productions of Copley, Stuart, Frothingham, Osgood, Alexander and others of our early artists. Our local artists presented many choice specimens, enumerated in the accompanying catalogue of two hundred and eighty-three pictures by one hundred and eighty-six contributors.

The eastern ante-room was occupied by the exhibition of bronzes, porcelain and pottery; one hundred and five specimens from forty-seven contributors. This was the first ceramic exhibition in Salem, and it was an entire success, and many rich and curious articles were there displayed.

CATALOGUE OF THE SECOND ART EXHIBITION, NOVEMBER, 1875.

No.	Title.	Artist.	Contributor.
1	James Miller.	C. Osgood.	Mrs. J. F. Miller.
2	Timothy Pickering.	S. L. Waldo.	J. Pickering.
3	John Pickering.	Chester Harding.	J. Pickering.
4	Richard Derby.	Sargent.	Misses Derby.
5	Thomas Cole.	C. Osgood.	Mrs. T. Cole.
6	Leverett Saltonstall.	C. Harding.	Mrs. J.F.Tuckerman.
7	Wm. Orne.		Essex Institute.
8	Jona. Webb.	Frothingham.	Gardner Barton.
9	Mrs. Edward Lander.	"	Misses Lander.
10	Edward Lander.	"	Misses Lander.
11	C. W. Upham.		Essex Institute.
12	William Bentley.		Essex Institute.
13	Zachariah Hicks.	Stuart.	Mrs. S. B. Howe.
14	B. Lynde Oliver.	Copy by Miss Gilbert.	J. G. Waters.
15	C. W. Upham.	Alexander.	Mrs. C. W. Upham.
16	A. Huntington.	B. C. Porter.	Mrs. A. Huntington.
17	Mrs. Lois Paine.		Mrs. J. S. Cabot.
18	Sir Richard Saltonstall.	Copy from Rembrandt, by C. Osgood.	Misses Saltonstall.
19	Pickering Dodge.	Frothingham.	W. A. Lander.
20	Penn Townsend.		J. G. Waters.
21	Mrs. Samuel Cook.		H. K. Oliver, Jr.
22	Nathaniel Lord.		G. R. Lord.
23	Alpheus Crosby.	E. Billings.	D. B. Hagar.
24	Nathaniel Hawthorne.		Mrs. G. B. Loring.
25	Wm. H. Prescott.	J. H. Young.	D. B. Hagar.
26	Nathaniel J. Lord.		George R. Lord.
27	Samuel Cook.		H. K. Oliver, Jr.
28	Family of Benjamin West.		Mrs. J. S. Cabot.
29	Rebecca Cabot, daughter of Timothy Orne.		Mrs. J. S. Cabot.
30	Benj. Waters, about 1800.		J. G. Waters.
31	View on the Presumpscot.	H. R. Brown.	E. C. Bolles.
32	Crayon Head.	Pupil of Miss Merrill.	S. H. Worcester.

No.	Title.	Artist.	Contributor.
33	View in Stowe, Vt.	G. M. White.	N. G. Simonds.
34	Water Color.	J. W. Thyng.	J. W. Thyng.
35	Drawing "The Page."	G. B. Haskell.	G. B. Haskell.
36	Flowers, French crayon.	Miss H. Putnam.	Miss H. Putnam.
37	Pencil drawing.	G. B. Haskell.	C. F. Archer.
38	Charcoal head.	Miss Ida Caller.	J. M. Caller.
39	Pen sketch.	O. W. H. Upham.	O. W. H. Upham.
40	Water color.	David Roberts, England.	Misses Saltonstall.
41	Out door sketch.	O. W. H. Upham.	O. W. H. Upham.
42	Lespieglerie.	G. M. White.	G. M. White.
43	Sketch at Seabrook.	Miss M. C. Allen.	Miss Allen.
44	La Mignonne.	G. M. White.	G. M. White.
45	Charcoal. Fancy head.	Miss Ida Caller.	J. M. Caller.
46	Copy of an old picture.	Miss H. F. Carlton.	Oliver Carlton.
47	Charcoal. Fancy head.	Miss Ida Caller.	J. M. Caller.
48	Monarch of the Glen.	G. Southward.	Observatory Club.
49	Drawing.	J. B. Hudson, Jr.	J. B. Hudson, Jr.
50	Beatrice Cenci.	After Guido.	Wm. A. Lander.
51	St. Francis, founder of the Franciscan Order.	Ribera.	Mrs. A. L. Peirson.
52	Water-Lilies.	Seavey.	G. W. Benson.
53	Pansies.	Seavey.	G. W. Benson.
54	Road-side View.	J. B. Hudson, Jr.	J. B. Hudson, Jr.
55	Flowering Vines.	Miss E. Gardner.	Miss E. Gardner.
56	Old Canal.	J. B. Hudson, Jr.	J. B. Hudson, Jr.,
57	Woodcock.	Mrs. G. P. Osgood.	Mr. G. P. Osgood.
58	Water-color.	Sattler.	John C. Lee.
59	Woodcock.	Mrs. G. P. Osgood.	Geo. P. Osgood.
60	Palette Knife Sketch.	H. M. Knowlton.	H. M. Knowlton.
61	Grief.	H. M. Knowlton.	Miss Knowlton.
62	Head of a Boy.	H. M. Knowlton.	Miss Knowlton.
63	Apple Peddler.	Pupil of Miss Knowlton.	Miss Knowlton.
64	The Exile.	H. M. Knowlton.	Miss Knowlton.
65	Portrait of Lady.	H. M. Knowlton.	Miss Knowlton.
66	Wisteria.	Miss S. E. Smith.	Miss Smith.
67	Portrait, Miss Manning.	Miss S. E. Smith.	Miss S. E. Smith.
68	Interior of a Studio.	Pupil of Miss Knowlton.	Miss Knowlton.
69	Apple Blossoms.	H. M. Knowlton.	Miss Knowlton.
70	Apple Tree at Manchester.	H. M. Knowlton.	Miss Knowlton.
71	Priscilla, (after Hunt).	Miss Smith.	Miss Smith.
72	Wayside Flowers.	Miss Smith.	Miss Smith.
73	Study.	Pupil of Miss S. E. Smith.	Miss Smith.
74	The Willows.	Miss S. E. Smith.	Miss Smith.
75	Sketch.	Wm. M. Hunt.	Mr. Hunt.
76	Medford Spires.	"	Mr. Hunt.
77	Cactus.	H. M. Knowlton.	Miss Knowlton.
78	June Day.	After Rousseau.	Miss S. E. Smith.

No.	Title.	Artist.	Contributor.
79	Study, charcoal.	Pupil of Miss Smith.	Miss S. E. Smith.
80	Study, charcoal.	Pupil of Miss Smith.	Miss S. E. Smith.
81	Study, charcoal.	"	Miss Smith.
82	Study, charcoal.	Miss H. M. Knowlton.	Miss Knowlton.
83	Sketch, charcoal.	Wm. M. Hunt.	Mr. Hunt.
84	Study, moonlight.	Miss H. M. Knowlton.	Miss Knowlton.
85	Study, from life.	Miss S. E. Smith.	Miss Smith.
86	Study, Azalia.	Pupil of "	Miss Smith.
87	Apple Blossoms.	Miss S. E. Smith.	Miss Smith.
88	Ginger Jar.	Pupil "	Miss Smith.
89	Planting.	Miss S. E. Smith.	Miss Smith.
90	Wild Flowers.	Pupil "	Miss Smith.
91	Portrait, Josh Billings.	Miss H. M. Knowlton.	Miss Knowlton.
92	Study.	Pupil of Miss Smith.	Miss Smith.
93	Wisteria.	"	Miss Smith.
94	Tea Roses.	Miss S. E. Smith.	Miss Smith.
95	Descent from the Cross.	(After Overbeck).	C. A. Ropes.
96	Madonna.	Copy from Raphael.	B. H. Silsbee.
97	Pond Lilies.	Mary H. Weston.	Miss Weston.
98	Saco River, N. Conway.	Geo. Newcomb.	Mr. Newcomb.
99	Cardinal Flower.	Nina Moore.	Mrs. K. Woods.
100	Water Color.		Miss Saltonstall.
101	Water Color.	Sattler.	J. C. Lee.
102	Water Color.		Miss Saltonstall.
103	Presumpscot Falls.	J. B. Hudson, Jr.	Mr. Hudson.
104	Moonlight.	R. D. Wilkie.	C. H. Higbee.
105	Dogs Heads.	Miss Nellie Haddock.	Miss Haddock.
106	Portrait, Mrs. Fitch.	Copley.	Misses Derby.
107	Pen Drawing.	Geo. M. White.	H. M. Brooks.
108	After the Storm.	Oliver.	C. A. Ropes.
109	Wild Flowers.	Mary H. Weston.	Miss Weston.
110	Baboosic Lake.	Mrs. F. Cox.	Mrs. Cox.
111	Wild Flowers.	Mary H. Weston.	Miss Weston.
112	The Showery Day.	Mrs. F. Cox.	Mrs. Cox.
113	Woodcock.	W. B. Parker.	Mr. Parker.
114	White Cactus.	Miss Kate Johnson	Miss Johnson.
115	Night Blooming Cereus.	"	Miss Johnson.
116	View on Lake George.	Fisher.	H. M. Brooks.
117	The Horse Fair.	Unknown.	Mrs. T. Hunt.
118	The Horse Fair.	"	Mrs. T. Hunt.
119	Marine View.	Ernest Fenollosa.	Mr. Fenollosa.
120	Pen Drawing.	Geo. M. White.	H. M. Brooks.
121	Pen Drawing.	"	H. M. Brooks.
122	Water Color.	Chinery.	T. F. Hunt.
123	Flower Piece.	Miss K. Johnson.	Miss Johnson.

No.	Title.	Artist.	Contributor.
124	The Shepherdess.	Henri.	C. A. Ropes.
125	Landscape.	M. Lajoie.	H. M. Brooks.
126	Water Color.	G. M. White.	Mr. White.
127	Water Color.	“	Mr. White.
128	Sea Mosses.	Miss M. Goldthwaite.	Miss Goldthwaite.
129	Water Color.	G. M. White.	Mr. White.
130	Water Color.		
131	Portrait.	Unknown.	Mrs. C. F. Williams.
132	Portrait, Lady.	Jean Raoux.	Miss Jackson.
133	Shop in Paris.	Lafaye.	George Peabody.
134	Diana's Baths.	Geo. Newcomb.	Mr. Newcomb.
135	Woman Selling Provisions.	After Gerhard.	George Peabody.
136	Interior.	Unknown.	Wm. A. Lander.
137	Landscape.	“	George R. Lord.
138	The Sisters.	Copy from Sir T. Lawrence.	J. P. Cook.
139	Water Color.	G. M. White.	Mr. White.
140	Water Color.		
141	The Dentist.	Mary H. Weston.	Miss Weston.
142	View near Naples.	School of Vernet.	Miss Jackson.
143	Portrait.	Mrs. M. J. David.	Mrs. E. Putnam.
144	Sunset.	J. J. Enneking.	T. F. Hunt.
145	Scriptural Subject.	Unknown.	J. M. Caller.
146	Reading Magdalen.	Mrs. H. M. Berry.	Mrs. Berry.
147	Autumn.	Mrs. A. M. Kindler.	Mrs. Kindler.
148	Deer.	Pupil of Miss Merrill.	A. E. Whitman.
149	Cloister Life.	Mary E. Williams.	Miss M. E. Williams
150	Roman Forum.	Moretti.	Miss M. E. Williams
151	Angels, after Raphael.		Miss M. E. Williams
152	Monks.	Mary E. Williams.	Miss M. E. Williams
153	St. Peter's.	Moretti.	Miss M. E. Williams
154	Roman Beggar.	Mary E. Williams.	Miss M. E. Williams
155	Study of an Arab.	“	Miss M. E. Williams
156	Heidelberg.	A. O. Williams.	Miss A. O. Williams
157	Sans Souci.	Mary E. Williams.	Miss M. E. Williams
158	Mt. Ætna.	A. O. Williams.	Miss A. O. Williams
159	Alchemist.	Mary E. Williams.	Miss M. E. Williams
160	View of Tivoli and Falls.	A. O. Williams.	Miss A. O. Williams
161	Roman Peasant Girl.	Mary E. Williams.	Miss M. E. Williams
162	Market Woman.	Unknown.	W. B. Parker.
163	Game.	Vervoort.	Essex Institute.
164	Landscape.	Böhm.	James O. Safford.
165	Twilight in Venice.	E. Cecchini.	Mrs. J. S. Cabot.
166	Head.	Mary E. Williams.	Miss M. E. Williams
167	Capture of Luther.	Van Starkenburgh.	Mrs. E. D. Kimball.
168	Fancy Head.	Miss Knight.	Miss Knight.
169	Salem Boy.	Geo. Newcomb.	C. S. Clark.
170	Iris; after Guido.	Mrs. H. M. Berry.	Mrs. Berry.
171	Mt. Shasta.	H. O. Young.	C. A. Ropes.

No.	Title.	Artist.	Contributor.
172	Landscape.	J. Both.	George Peabody.
173	Water Color.	Miss Needham.	Mrs. T. Hunt.
174	Cherries.	G. M. White.	T. F. Hunt.
175	Landscape.	Wynants.	George Peabody.
176	Norwegian Scenery. After Gude.	S. P. Hodgdon.	George Peabody.
177	Woodbine.	Mrs. H. H. Davis.	Mrs. Davis.
178	Off Baker's Island.	G. M. White.	T. F. Hunt.
179	Pen Sketch.	G. M. White.	T. F. Hunt.
180	Magdalen.	Guido.	Mrs. S. B. Howe.
181	Washington.	Jos. Ames.	E. W. Upton.
182	St. Ursula.		Mrs. S. B. Howe.
183	The Wayside Trough.	A. P. Close.	J. P. Cook.
184	Head; after Miss Knowlton.	Miss Caller.	Miss Caller.
185	Osgood Fire Place.	Miss K. Brooks.	H. M. Brooks.
186	Basket of Chestnuts.	"	H. M. Brooks.
187	White Lily.	Miss L. E. Merrill.	Miss Merrill.
188	Flower Panel.	Miss Williams.	Miss Williams.
189	Wild Flowers.	Miss L.E.Merrill.	Miss Merrill.
190	Holy Family.	Unknown.	Geo. P. Osgood.
191	Fruit Piece.	Miss L. E. Merrill.	Miss Merrill.
192	Lily of the Valley.	L. L. A. Very.	Miss Very.
193	Gil Blas.	Van Lerius.	Miss Jackson.
194	Study.	Miss A. A. Agge.	Miss Agge.
195	Study from a cast.	W. H. White.	W. H. White.
196	Crab Apples.	Miss L. E. Merrill.	Miss Merrill.
197	Ginger Jar.	Geo. Newcomb.	Mr. Newcomb.
198	Flower Piece.	Miss Emily Williams.	Miss Williams.
199	Trees on Blue River, Nebraska.	T. M. Osborne.	Mr. Osborne.
200	View in Newbury, Vt.	Miss M. S. Bullard.	Miss Bullard.
201	Blackberry Vine.	Miss L. L. A. Very.	Miss Very.
202	Flower Panel.	Miss M. E. Williams.	Miss Williams.
203	Little Red Riding Hood.	Miss L. L. A. Very.	Miss Very.
204	Apple Blossom.	Miss C. L. Grant.	Miss Grant.
205	A fresh puff off shore.	S. G. W. Benjamin.	J. A. Gillis.
206	Morning on Columbia River.	H. O. Young.	J. P. Cook.
207	Wild Flowers.	Mrs. F. Cox.	Mrs. Cox.
208	The Mountain River.	J. Warren Thyng.	Mr. Thyng.
209	Wild Flowers.	Mrs. F. Cox.	Mrs. Cox.
210	Marine View.	Geo. M. White.	N. G. Simonds.
211	Gloucester Beach.	S. S. Tuckerman.	J. F. Tuckerman.
212	Study of Rocks at Nahant.	Mrs. F. Cox.	Mrs. Cox.
213	Winter Scene.		W. A. Lander.
214	Landscape.		C. H. Higbee.
215	Dogs Heads; after Landseer.	Miss S. E. Smith.	Miss Smith.
216	Portrait.	Frothingham.	Misses Forrester.
217	Portrait.	Stuart.	Misses Forrester.
218	Portrait.	Alexander.	Essex Institute.
219	Placid Lake.	S. P. Hodgdon.	E. K. Benson.
220	Interior; with Figures.	Vautier.	Mrs. Mott.
221	Summer Sunset.	Miss H. F. Osborne.	Miss Osborne.

No.	Title.	Artist.	Contributor.
222	The Play Mates.		Miss H. Silsbee.
223	Winter Sunset.	Miss H. F. Osborne.	Miss Osborne.
224	Marine View.	Geo. M. White.	H. F. Waters.
225	Spanish Peasants.	After Murillo.	Mrs. Mott.
226	Wayside Inn.		Miss Jackson.
227	White Mountain Brook.	Mrs. A. M. Kindler.	Mrs. Kindler.
228	Marine View.	Geo. M. White.	H. F. Waters.
229	Marblehead Neck.	Miss H. F. Osborne.	Miss Osborne.
230	Home they brought her Warrior dead.	" "	Miss Osborne.
231	Flowers.	Miss H. M. Knowlton.	H. F. Waters.
232	Marine View.	Miss Caller.	Miss Caller.
233	Angel.	After Fra Angelico.	Mrs. F. H. Lee.
234	Angel.	After Fra Angelico.	Mrs. F. H. Lee.
235	Water color.		W. A. Lander.
236	Washington.	After Stuart.	Miss H. E. Deland.
237	Alexander Hamilton.	Trumbull.	Essex Institute.
238	Sunset at Sea.	S. G. W. Benjamin.	T. F. Hunt.
239	May Flower.	Miss C. L. Grant.	Miss Grant.
240	Misty Morning on the Hudson.	G. D. Brewerton.	X. H. Shaw & Son.
241	Pen Drawing; Archb. Williams.	Willis B. Youngman.	E. N. Peabody.
242	From the Cliff, Newport.	G. D. Brewerton.	X. H. Shaw & Son.
243	Water Color.	Miss E. M. Burrows.	M. S. Shaw.
244	Storks Tower.	Mrs. A. Hyatt.	Mrs. Hyatt.
245	Study.	Geo. M. White.	H. F. Waters.
246	Flower Piece.	Miss E. M. Burrows.	Miss L. Tappan.
247	Peaches.	Mrs. H. M. Berry.	Mrs. Berry.
248	Dawn off White Island.	S. G. W. Benjamin.	Mr. Benjamin.
249	Misty Morning on Lake Thun.	Mrs. A. Hyatt.	Mrs. Hyatt.
250	Artists' Brook, N. Conway.	Miss L. Lander.	Miss Lander.
251	Water Color.	Miss F. Bridges.	Miss Bridges.
252	Water Color.	" "	Miss Bridges.
253	Our Sunny Knoll.	Miss E. Gardner.	Miss Gardner.
254	Water Color.	Miss L. Lander.	Miss Lander.
255	Roman Peasant.		Misses Saltonstall.
256	Ingtham Moat, Sussex.	Buckley, senior.	Misses Saltonstall.
257	Peasant Girl from the Campagna.		Misses Saltonstall.
258	Flower Piece.	Miss K. Johnson.	Miss Johnson.
259	A Quiet Nook.	Miss L. Lander.	Miss Lander.
260	Lilies.	Helen F. Ayres.	Miss Ayres.
261	Morning Glories.	Miss C. L. Grant.	Miss Grant.
262	Mill in Suabian Alps.	Mrs. A. Hyatt.	Mrs. Hyatt.
263	Whitby Abbey.	" "	Mrs. Hyatt.

No.	Title.	Artist.	Contributor.
264	Water Color.	Miss E. M. Burrows.	M. S. Shaw.
265	Nobeka Beach.	Mrs. A. Hyatt.	Mrs. Hyatt.
266	Birds.	Miss L. Lander.	Miss Lander.
267	Wisteria.	Miss C. L. Grant.	Miss Grant.
268	Autumn.	Miss L. Lander.	Miss Lander.
269	After School.	J. F. Lyon.	Mr. Lyon.
270	Portrait.	Miss Myra Derby.	Miss Warner.
271	Scientific Drawing.	S. E. Cassino.	Mr. Cassino.
272	James Silver.		Wm. Silver.
273	Samuel Webb.		G. Barton.
274	Water Color.	Chinery.	T. F. Hunt.
275	Joseph Mosely.		Mrs. T. B. Russell.
276	Ancient Painting.		Nicholas Pitman.
277	Autumn Leaves.	Miss Alice Caller.	Miss Caller.
278	Autumn Leaves.	" "	Miss Caller.
279	Study.	W. H. White.	Mr. White.
280	New England Scenery.	H. F. Higgins.	J. P. Cook.
281	Everlastings.	W. H. White.	Mr. White.
282	Pond Lilies.	Mrs. G. P. Osgood.	Mrs. Osgood.
283	Fancy Head.	Geo. Southward.	J. M. Caller.

CERAMICS, BRONZES, ETC.

No.	Title.	Contributor.
1	Collection of Pottery, etc.,	Tech. Dep. Essex Ins.
2	China Plate (Canton, modern),	Mrs. J. P. Cook.
3	Japanese Plate (modern),	Mrs. J. P. Cook.
4	Japanese cup and saucer (modern),	Mrs. J. P. Cook.
5	Japanese cup and saucer (modern),	Mrs. J. P. Cook.
6	Porcelain Pen Rest (Chinese),	Mrs. J. P. Cook.
7	Japanese Cup and Saucer (modern),	Mrs. J. P. Cook.
8	Jade Stone Ornament,	T. F. Hunt.
9	Japanese Plate (modern),	Mrs. J. P. Cook.
10	Cup and Saucer, hand-painted,	Mrs. Chas. S. Nichols.
11	Cup and Saucer, hand-painted,	Mrs. Chas. S. Nichols.
12	Cup and Saucer (Sevres China),	William Silver.
13	Christian Lamps and Vases from Catacombs at Rome,	Miss Mary E. Williams.
14	Models of Vases found in Pompeii,	Miss Mary E. Williams.
15	Ancient Etruscan Pottery,	Miss Mary E. Williams.
16	Ancient Lamp and Medallion,	Miss Louisa Lander.
17	Early North American Pottery,	F. W. Putnam.
18	Stone Pipe from Jagga Country, Africa,	Caleb Cook.
19	American Pottery,	Miss Louisa Lander.
20	Four examples of Beverly Pottery, decorated by Miss Kate Johnson,	J. Robinson.
21	Two examples of Beverly Pottery, decorated in India Ink by E. S. Morse,	E. S. Morse.
22	Lambeth Jug,	J. Robinson.
23	Four examples of Lancaster Pottery,	Mrs. C. S. Nichols.

No.	Title.	Contributor.
24	Six examples of Chinese Pottery,	T. F. Hunt.
25	Japanese Pottery,	C. Cook.
26	Horse of Marly, Bronze,	J. C. Lee.
27	Bronze Leopard,	J. C. Lee.
28	Silver Bronze Vase,	J. C. Lee.
29	Bronze Leopard,	J. C. Lee.
30	Horse of Marly,	J. C. Lee.
31	Bronze Bell of St. Peter's,	J. C. Lee.
31 *a*	Plate, Cup and Saucer, brought from China in the Grand Turk, 1785,	Misses Derby.
32	China Plate,	G. R. Curwen.
33	Cup and Saucer, Chinese (ancient),	G. R. Curwen.
34	Cup and Saucer, Chinese (ancient),	G. R. Curwen.
35	Old Nanking Custard Cup,	G. R. Curwen.
36	Tea Set, China, about 1800,	Mrs. Jos. Osgood.
37	Seven pieces of Canton Ware, about 1820,	Jona. Tucker.
37 *a*	Four pieces of Old China,	Miss M. Whipple.
38	Plate, Old China,	Mrs. Frost.
39	Bowl, Japan,	Mrs. J. P. Cook.
40	Plate, Old China,	Mrs. Frost.
41	Porcelain and Wicker Work, Bowl and Plate, Japan,	Mrs. T. Hunt.
42	Plate, China,	Mrs. M. A. Andrews.
43	Plate, Old China,	Mrs. Jona. Perley.
44	Cup and Saucer, Canton Ware,	Mrs. Jona. Perley.
44 *a*	Old Blue Tea Caddy, Cup and Saucer,	Misses Derby.
45	Saki Bottle, Japan,	Mrs. J. P. Cook.
46	Tea Pot, Japan,	Mrs. J. P. Cook.
47	Dragon Vase, China,	Mrs. J. P. Cook.
48	Porcelain Pagoda,	Mrs. T. Hunt.
49	Pair of Crackle Vases,	H. F. Waters.
50	Porcelain Ornaments,	Mrs. T. Hunt.
51	Dragon Vase,	Mrs. T. Hunt.
52	Porcelain Vase,	Mrs. J. P. Cook.
53	Cream Jug, Old China Ware,	Mrs. J. P. Cook.
54	Old Nanking Tea Pot,	Mrs. J. P. Cook.
55	Japanese Lacquer Porcelain Tea Pot,	Mrs. J. P. Cook.
56	Plate, formerly property of Royal Family, France,	Miss J. F. Bond.
57	Old French Ware, 1676,	Jona. Tucker.
58	Old Pencil Ware, four pieces,	Jona. Tucker.
59	Two Old Tiles,	Mrs. T. B. Russell.
60	Cream Jug, Old English Ware,	B. D. Hill.
61	Bowl,	B. D. Hill.
62	Old English Ware,	Mrs. T. B. Russell.
63	Bowl,	G. P. Daniels.
64	Coffee Pot, 1775,	G. P. Daniels.
65	Coffee Pot, China, 1803,	Mrs. E. Emmerton.
66	Pencil Ware, Cup and Saucer,	Miss E. H. Kimball.
67	Liverpool Ware, plate,	G. R. Curwen.
68	Pitcher, taken by a Privateer, 1812,	Mrs. M. A. Tufts.
69	Chelsea Ware,	Miss J. F. Bond.
70	Sugar Bowl, Gen. James Miller's Wedding Set,	Mrs. C. H. Higbee.
71	Dutch Porcelain Mug,	Miss L. Lander
72	Old English Ware Gravy Dish,	Miss L. Lander.

No.	Title.	Contributor.
73	Sugar Bowl, Wedgwood Ware, Flaxman's designs,	Miss L. Lander.
74	Louis 14th Mug and Saucer,	Miss L. Lander.
75	Old Indian Mug and Saucer,	Miss L. Lander.
76	Independence Ware Plate,	E. L. Perley.
77	Vase, French,	Mrs. C. H. Higbee.
78	Masonic Wine Glass,	Jona. Perley.
79	Glass Ware,	Mrs. G. M. Whipple.
80	Japanese Crystal,	Mrs. T. Hunt.
81	Glass Bottle, 1767,	Jas. Kimball.
82	Glasses used by Gen. Miller in war of 1812,	Miss M. E. Miller.
83	Hour Glass Bottle,	Miss E. H. Kimball.
84	Old English Glass,	G. R. Curwen.
85	Old Beer Jug, English,	B. D. Hill.
86	Native Majolica, Boston, Nov. 9, 1872,	J. Robinson.
87	Puzzle Pitcher,	Jas. Kimball.
88	Beer Mug,	Jas. Kimball.
89	German Vase,	Jas. Kimball.
90	Bowl and Pitcher,	Miss A. Grant.
91	Collection of Coins of all Nations, from the earliest times to the present, showing the progress of the art of coinage, arranged and contributed by	J. Robinson.
92	Modern copy Burnt China,	H. F. Waters.
93	Old Burnt China,	H. F. Waters
94	Old Burnt China,	H. F. Waters.
95	Delft,	H. F. Waters.
96	Old China,	H. F. Waters.
97	Old China,	H. F. Waters.
98	Delft,	H. F. Waters.
99	Japanese Teapot,	H. F. Waters.
100	Rouen Jar,	H. F. Waters.
101	Japanese Saucer,	H. F. Waters.
102	Burnt China Cup and Saucer,	H. F. Waters.
103	Silver Watch 150 years old,	Miss Mary E. Williams.
104	Silver Bell, figure of Silenus,	H. F. Waters.
105	Two watches 150 years old,	H. F. Waters.
106	Old China Cup and Saucer,	H. F. Waters.
107	Rouen Jar,	H. F. Waters.
108	Chinese Teapot,	Mrs. T. Hunt.
109	Old Cake Dish,	H. F. Waters.
110	Very old China Bowl,	H. F. Waters.
111	Blue China Dish,	H. F. Waters.
112	Elder Brewster Teapot,	H. F. Waters.
113	Old China Coffee Cup and Saucer,	H. F. Waters.
114	Old China Soup Plate,	H. F. Waters.
115	Specimen of Rogers Ware, English,	H. F. Waters.
116	Old China Tea Caddy and Stand,	H. F. Waters.
117	Delft Plate,	H. F. Waters.
118	Old China Tea Pot,	H. F. Waters.
119	Blue China Dish,	H. F. Waters.
120	Old China Bowl,	H. F. Waters.
121	Decorated China,	H. F. Waters.
122	Twenty-eight pieces of Glass Ware, of English, German and Venetian make,	H. F. Waters.

No.	Title.	Contributor.
123	Painting on Copper, silver frame,	Miss Mary E. Williams.
124	Door Plates,	Miss Kate Johnson.
125	Whist Counters,	
126	Wedgwood Portrait Sir W. J. Hooker,	J. Robinson.
127	Portrait in Wax,	Mrs. E. G. Perkins.
128	Highland Mary Snuff Box,	Miss E. H. Kimball.
129	Collection of Miniatures,	
130	Painted Table Top,	Mrs. E. T. Kemble.
131	Bronze Medallion of Gibson, the Sculptor,	Miss Louisa Lander.
132	Collection of Manuscripts,	Manuscript Department, Essex Institute.
133	Collection of Ceramics,	Dep't of Technology, Essex Institute.
134	Bronze Figure.	Mrs. T. Hunt.
135	Bronze Group of Dogs,	J. C. Lee.
136	Bronze figure.	Mrs. T. Hunt.
137	Pair of Bronze Vases,	Mrs. T. Hunt.
138	Pair of Bronze Vases,	J. Robinson.
139	Sesostris.	J. Robinson.
140	Metallization of Plaster from "The Cluny,"	Mrs. C. S. Nichols.
141	Esculapius.	J. C. Lee.
142	Japanese Platter,	H. F. Waters.
143	Jupiter,	J. C. Lee.
144	Figure Metallization of Plaster from "The Cluny,"	Mrs. C. S. Nichols.
145	St. George and the Dragon,	A. H. Johnson.
146	Bronze Vases, Japanese,	J. P. Cook.
147	Pair of Carved Wood Stands, Chinese,	Mrs. T. Hunt.
148	Very old Chinese Bronze Vase,	A. S. Packard, Jr.
149	Bronze Figure (Horse),	J. C. Lee.
150	Damascus Metal Bowls,	Misses Forrester.
151	The Dying Gladiator,	Miss Saltonstall.
152	Bronze Vases, Japanese,	J. P. Cook.
153	Porcelain Vases, Chinese,	Mrs. T. Hunt.
154	Old Bronze Incense Burner, Chinese,	J. P. Cook.
155	Japanese Bronze,	J. P. Cook.
156	Incense Burner, Chinese,	Mrs. J. Osgood.
157	Pair of Gilded Vases, Chinese,	Mrs. J. P. Cook.
158	Pair of Japanese Vases,	Mrs. T. Hunt.
159	Pair of Bronze Incense Burners, Chinese,	Mrs. J. P. Cook.
160	Pair of Chinese Vases,	Mrs. J. P. Cook.
161	Old China Vase (about 1,400),	Mrs. T. Hunt.
162	Pair of Japanese Vases,	Mrs. T. Hunt.
163	Pair of Bronze Candlesticks, Japanese,	Mrs. J. P. Cook.
164	Pair of Bronze Ornaments, Chinese,	Mrs. J. P. Cook.
165	Pair of Bronze Vases, Chinese,	Mrs. J. P. Cook.
166	Japanese Stork Candlesticks,	Mrs. J. P. Cook.
167	Bronze Image Worshipped by the Chinese,	J. P. Cook.
168	Chinese Gong Bronze,	J. P. Cook.
169	Pair of Japanese Vases,	J. Robinson.
170	Pair of Candlesticks used in South Church, 1804,	J. Robinson.
171	Chinese Porcelain Jar,	J. Robinson.
172	Pair of Japanese Vases,	J. Robinson.
173	Japanese Cabinet.	J. Robinson.

No.	Title.	Contributor.
174	Tea Caddy, Chinese,	J. Robinson.
175	Pair of Japanese Bottles,	J. Robinson.
176	Roman Lamp,	Miss M. E. Williams.
177	Pair of Japanese Platters,	J. Robinson.
178	Japanese Lacquer Platters,	J. Robinson.
179	Florentine Lamp,	Miss M. E. Williams.
180	Japanese Cabinet,	J. Robinson.
181	Japanese Vase,	J. Robinson.
182	Collection of Glass, etc.	Dep't of Tech. Essex In.
183	Collection of Tiles, etc.	Dep't of Tech. Essex In.
184	Collection of Beverly Pottery,	Mr. Lawrence.
185	Paper Making and Jug Making,	Dep't of Tech. Essex In.
186	Collection of Chinese and French Ware,	Mrs. C. F. Williams.

Regular Meeting, Monday, November 15, 1875.

Vice President Goodell in the chair. Records read.

Mary E. Gould and George L. Upton of Salem were elected resident members.

Regular Meeting, Monday, December 6, 1875.

Meeting this evening. In the absence of President and Vice Presidents, Mr. C. H. Higbee was requested to take the chair. Records read.

The Secretary announced the following correspondence:—

From Boston Public Library, Dec. 1; British Archæological Association, Nov. 27; Historical Society of Pennsylvania, Nov. 30; F. B. Hough, Washington, D. C., Nov. 15; M. Knoedler & Co., New York, Nov. 3; G. P. Lothrop, Boston, Nov. 13, 16; Maryland Historical Society, Nov. 24; R. C. Manning & Co., Salem, Dec. 1; New York Historical Society, Nov. 30; Charles C. Perkins, Boston, Nov. 14; C. O. Thompson, Worcester, Nov. 13, 16.

The LIBRARIAN reported the following additions:—

By Donation.

BAGLEY, JOHN J., of Lansing, Mich. Proceedings at the laying of the corner stone of the Capitol of Mich., Oct. 2, 1873.

BAKER, NATHANIEL B., of Des Moines, Iowa. Adjutant General's Report of Iowa, Jan. 1, 1874 to Jan. 1, 1875.

COLE, MRS. N. D. Kindergarten Messenger, 14 numbers.

HAMMOND, CHAS., of Monson, Mass. Catalogue of Monson Academy, 1875–76.

HUMPHREYS, A. A., of Washington, D.C. Report of a Reconnaissance of the Black Hills of Dakota made in 1874, by Wm. Ludlow. 1 vol., 4to.

KIMBALL, JAMES. Cape Ann Advertiser, Oct. and Nov., 1875.

JOHN C. LEE. Commercial Bulletin, Aug. to Nov., 1875.

LEVETTE, GEO. M., of Indianapolis, Ind. Indiana Agricultural Reports, 1874, 5 vols. Transactions of the Indiana Horticultural Society, 1874. Indianapolis Directory, 1872–73. House Journal, 1871. Senate Journal, 1871. Ohio Statistics, 1872. New School Law of Indiana, 1873. Laws of the State of Indiana, 1871.

MATTHEWS, W. L., of Warsaw, Ind. Report of the Superintendent of Public Instructions of Indiana, 1874.

MAYER, ALFRED M., of Hoboken, N. J. Miscellaneous pamphlets, 5.

MERRITT, L. F. Essex County Mercury, May to Nov., 1875.

NEFF, J. E., of Indianapolis, Ind. Documentary Journal of Indiana, 2 vols., 8vo. Report of the Secretary of State, Oct., 1873, 1 vol., 8vo.

PUTNAM, F. W. On the Habits of the Blind Crawfish, 8vo pamph., 1875. New York Tribune, Sept., Oct., Nov., 1875.

STEPHENS, W. H., of Lowville, N. Y. Statutes of South Carolina, Vol. I, 1836.

STONE, B. W. New York Directory, 1873. Essex Co. Directory, 1870. Salem Directory, 1869. N. Y. Business Directory, 1874.

STONE, E. M., of Providence, R. I. Report of School Committee of Providence, June, 1875.

THORNTON, J. WINGATE, of Boston. The Garden of Health, 1 vol., 4to.

WADSWORTH, H. E., of La Porte, Ind. Rockport City Directory, 1872–73.

U. S. DEPARTMENT OF INTERIOR. Documents, 42nd Cong., 2 vols. 1st Sess., 43rd Cong., 36 vols.

U. S. BUREAU OF EDUCATION. Report of the Commissioner of Education, 1874. 1 vol., 8vo.

U. S. PATENT OFFICE. Official Gazette, Aug., Sept., Oct., and Nov., 1875.

UPTON, JAMES. Baptist Missionary Magazine, 1870–74. Good Health, 1871. Missionary Magazine, 1870.

WARNER, OLIVER, of Boston, Mass. Mass. Public Documents, 1874, 5 vols. Acts & Resolves, 1875.

WATERS, J. LINTON. History and Directory of Kent Co., 1870. Cincinnati Directory, 1840.

UNKNOWN. Proceedings at the Centennial Celebration of the Battle of Lexington, Apr. 19, 1875. 1 vol.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the, Apr. 28, 1875.

AMHERST COLLEGE LIBRARY. Triennial Catalogue, 1875.

ARCHIV FUR ANTHROPOLOGIE, BRAUNSCHWEIG. Band viii. Aug., 1875.

BELFAST NATURALISTS' FIELD CLUB. Annual Report of the, 1873–74. Guide to Belfast, 1 vol.

Berwickshire Naturalists' Club. Proceedings of the, Vol. vii. No. II, 1874.

Boston Society of Natural History. Memoirs of the, Vol. ii. Part IV, No. 11, 1875. Proceedings of, Vol. xvi i, pt. I, II, 1875.

Botanisk Tidsskrift in Kjöbenhavn. Tidsskrift, 1874. 2 pamphlets.

Boston Public Library. Bulletin, Oct., 1875.

Buffalo Society of Natural Sciences. Bulletin. Vol. iii, No. I, 1875.

Canadian Institute. Journal, July, 1875.

Kongelige Danske Videnskabernes Selskab Kjöbenhavn. Oversigt, Bd. 1874, No. 11.

L'Académie Impériale des Sciences de St. Petersburg. Memoires, Tome xxi, Nos. 6-12, 1874; Tome xxii, Nos. 1-3, 1874-5. Bulletins, Tome xix, Nos. 22-37, 1874; Tome xx, Nos. 1-21, 1874.

Literary and Historical Society of Quebec. Transactions, 1873-74, 1874-75.

Naturforschende Gesellschaft, Danzig. Schriften, Bd. iii, Heft. iii, 1874.

Naturhistorische Gesellschaft zu Hannover. Dreiundzwanzigster & Vierundzwanzigster Jahresbericht, 1872-73, 1873-74. 2 pamphlets.

Naturwissenschaftlicher Verein zu Hamburg. Naturwissenschaften, v, Bd. 4 Abth. 1873.

N. H. Historical Society. Proceedings of, 1874-5. 1 vol.

N. E. Historic Genealogical Society. Register, Vol. xxix. Oct., 1875.

N. Y. Genealogical and Biographical Society. Record, Oct., 1875.

N. Y. Historical Society. Catalogue of Museum and Gallery of Art, 1874.

Physikal Medicin Gesellschaft in Würzburg. Verhandlungen, Bd. viii, Heft iii and iv. 1875.

Royal Cornwall Polytechnic Society. Annual Reports, 1833-74 inc.

Société d'Acclimation, Paris. Bulletin, 3e Série, Tome 11. Apr., 1875.

Société d'Anthropologie, Paris. Bulletin, Tome x. Mar-Mai, 1875. 8vo.

Société Linneene Bordeaux. Actes, Tome xxvii, pt. II; Tome xxviii, pt. I, II, 1872.

Société Royale des Antiquaires du Nord Kjöbenhavn. Memoires, 1873-74.

Société des Sciences Naturelles du Grand-Duche de Luxembourg. Publications of, Tome xv, 1875.

Société Entomologique de Russie Horæ Societatis Entomologicæ Rossicæ. Tome ix, No. 3, 1873. Tome x, No. 1-4, 1873-74. Beitrage, 1874.

Smithsonian Institution. Report of the Board of Regents, 1873, 1874. 2 vols.

Société Royale des Sciences de Liege. Memoires. Tomes iv, v, 1873, 1874.

Société Vaudoise des Sciences Naturelles, Lausanne. Bulletin, No. 74. Mai, 1875.

Vereins für Erdkunde zu Darmstadt. Notizblatt iii, Folge Heft xiii. 1874.

Veriens für Erdkunde zu Dresden. Jahresbericht, xi, xii, 1875.

W. H. Yeomans, of Columbia, Conn. Report of the Conn. Board of Agriculture, 1874. Indiana Agricultural Reports, 1870. Geological Survey of Indiana, by E. T. Cox, 1870. Miscellaneous pamphlets, 36.

Yale College. Catalogue of the Officers and Students, 1875-76.

Zoologische-Gesellschaft, Frankfurt. Zoologische Garten, xvi Jahrg. Jan.-Juni, 1875.

Zoologisch-Mineralogischen Vereins in Regensburg. Abhandlungen, Zehntes Heft, 1875. Corresponding-Blatt, 1874.

Publishers. American Journal of Science. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Journal of Conchology. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Quaritch's Catalogue. Sailor's Magazine. Salem Gazette. Salem Observer. Salem Post. Salem Register. Tuft's Collegian. Turner's Public Spirit.

Rev. **George F. Wright**, of Andover, read the paper of the evening, an abstract of which is here inserted.

INDIAN RIDGE AND ITS CONTINUATIONS.

The so-called "Indian Ridge" of Andover, Mass., has long been an object of curiosity to citizens, and of interest to geologists. In the "Transactions of the Association of American Geologists and Naturalists," for 1841 and 1842, Pres. Edward Hitchcock, of Amherst College, gave a detailed account of the formation so far as it had then been observed.[1] This distinguished observer characterized it as "decidedly the most interesting and instructive case [of moraine ridges] which he had met with." A map of it is given in the same paper, taken from a survey of Professor Alonzo Gray, then of Andover, now of Brooklyn, N. Y. This map, in reduced dimensions, reappears in Hitchcock's Elementary Geology,[2] as an illustration of "Submarine Ridges."

The formation is described as a series of narrow, partially parallel and interlacing ridges, composed of sand, gravel and boulders intermixed. These ridges are said to be from fifteen to thirty feet high and four or five rods through at the base, extending a mile and a half or more, in a line nearly north and south. Similar ridges two or three miles south are alluded to; and at South Reading, now Wakefield, twelve miles south of Andover, still other and higher ridges of a like nature were observed. At the close of his remarks upon the subject, Dr. Hitchcock writes, "I presume that still further careful examination of the region above described may show other similar ridges, or a continuation of those on the map. . . . I would gladly resurvey all the moraines with which I am acquainted, in the confident belief that now 'I have learnt to see,' I should find many of them continuous ridges where I have supposed a confused group of moraines to exist." Acting upon this hint I have given my spare time for many months back, in attempting to add to our stock of knowledge upon the subject. I herewith furnish a brief survey of the results.

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[1] See page 198.

[2] See page 260 (30th edition).

1. Measurements. Taking them in order, going westward about half a mile from Andover depot, and measuring from their base, the East ridge is 41 feet high, the Middle or Indian ridge is 49 feet, and the West ridge 91 feet. The base is 40 feet above the Shawshin river, and 90 feet above the sea level. So that the summits of these ridges at this point are, respectively, 131, 139, and 181 feet above the ocean. The west ridge at the place of measurement is 250 feet broad at the base. I am indebted to various members of the scientific class of 1875, in Phillip's Academy, for assistance in securing these measurements.

2. Composition. These ridges were not primarily stratified, and so differ in an important respect (if their observations were sufficiently accurate) from the "Horsebacks" of Maine, described by Professor C. H. Hitchcock,[3] and the "Kames" of Scotland, described by James Geikie.[4] There is, however, usually a secondary stratification along the flanks of the ridge, and around the rim of the numberless basins that are enclosed by its interlacing branches, and in some places the entire ridge is stratified. But ordinarily, sand, gravel, pebbles and boulders are indiscriminately mingled. Boulders from a few inches to two or three feet in diameter are found in the higher portions of the Ridge as well as in the lower.

3. Character of the Stones. The stones of the ridge are uniformly rounded and polished, but I have

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[3] See Maine Agricultural Reports, 1861, 1862.

[4] See The Great Ice Age, pp. 210-237.

failed to find any scratches upon their surface, such as are frequently found upon those of the "ground moraine" of this region. They are not of local origin, but consist, in indiscriminate mixture, of granite, gneiss, and slatestones from the North. Among these a rose quartz is abundant.

4. Extent of the Ridge. With only such interruptions as are made by river valleys and water courses, or by other apparent causes, I have traced this series of ridges, in continuous line, from Wakefield, through Reading, North Reading, Wilmington, Ballardvale, Andover, Lawrence and Methuen to Salem in New Hampshire, a distance of nearly twenty-five miles as the bird flies. I have with tolerable certainty identified it on either side of these limits: south, in Melrose and Malden; north, as far as Derry Station, N. H.

5. Direction. It will be observed that this line corresponds with the direction of the glacial striæ of this vicinity, about 15° N. W. by S. E. The line projected to the north would coincide with the axis of the Merrimack valley above Manchester, N. H.

6. Hypothesis. We have not time to work out the details of the hypothesis which accounts for the facts so far as at present observed. It is sufficient to say that we expect eventually to demonstrate that this net-work of ridges is the medial moraine of that portion of the continental glacier which took its local direction from the Merrimack valley. The floods of water which during the period of its retreat flowed forth from the foot of that glacier would account for the partial stratification that is observed.

7. Conclusion. But we wait for further investigation, especially in the line north and south. And we solicit facts from any observers, first, as to the composition of the hills in this vicinity, and for twenty miles east or

west of the line of this Ridge, whether they are of solid rock, or of loose material, whether stratified or not, and whether the material is of local origin. And furthermore what is the direction of the axis of these "drift" hills? And are there elsewhere such ridges as we have described; and what is their direction? The Essex Institute would do an important work if its members should systematically collect the facts concerning the whole drift deposit of the Merrimack valley. When these are gathered and arranged, we can popularize for this region the intensely interesting subject of the glacial age, which now does not have the practical hold of the popular imagination that its merits, and the proximity of its phenomena, demand.

At the close of the lecture the subject was continued by remarks from Dr. A. H. Johnson, Messrs. W. P. Upham, C. H. Higbee and others, and a vote of thanks was passed to Mr. Wright for his instructive paper.

George West, George Newcomb and C. A. Shaw were elected resident members.

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REGULAR MEETING, MONDAY, DECEMBER 20, 1875.

MEETING this evening. The PRESIDENT in the chair. Records read.

Robert C. Mills, Charles R. Mills, George W. Benson, E. K. Benson, Lewis F. Miller, S. F. Chase, D. B. Kimball and Abby R. Knight were elected resident members.

BULLETIN

OF THE

ESSEX INSTITUTE,

VOLUME VIII.

1876.

SALEM, MASS.
PRINTED AT THE SALEM PRESS.
1877.

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., JANUARY, 1876. No. 1.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, JANUARY 3, 1876.

MEETING this evening. The PRESIDENT in the chair. Records read.

The paper for the evening was on "The Instinct and Intelligence of Animals," by S. C. OLIVER.

Colonel Oliver illustrated his remarks with explanatory anecdotes, and said that spoken and written language and all the significant machinery of human life had come to be regarded as essential parts of our intelligence, and it would be no easy matter for us to represent to ourselves the movements of the human intellect deprived of the assistance of that artificial apparatus employed by human beings to enlarge the compass of thought and of knowledge. It is quite necessary however to make the attempt to set forth the fundamental peculiarities of intelligence in general, that we may, by this means, gain another step towards the rational explanation of the animal mind.

The first great feature of intelligence common to the whole animal race, with of course difference of degree, we may express by the term *docility*, meaning by it the power of making acquisitions of every kind independent of the native or inborn capacities. There is evidently a great inferiority in the extent and in the character of the brute acquisitions as compared with humanity. It is doubtful how far an ordinary quadruped can revive the pictorial impressions of sight in the entire absence of the original so as to go through an operation truly mental, and live in the past, the present and the future. The best of animals can go but a little way towards recognizing the proportions of natural objects, chiefly on account of their utter want of all the artifices of indirect vision, which have their perfect exemplification in the human sciences.

It usually happens that every active weapon or instrument belonging to the structure of an animal is fully provided with nervous communications with all the other parts of the system through the common centre of nervous action, and is in this way put to employment on all convenient occasions. Nothing more is required than such a method of connection to insure the application of every species of active impulse wherever it can be of any avail. The electric organs of the torpedo are related by massive cords of nerve to the brain of the animal, and act in sympathy with its wishes and movements.

We are to conceive of each class of animals as possessed of a certain number of susceptibilities and active capacities in more or less measure of energy, and also of the power of harmonizing, combining and arranging the one to meet the other through the medium of a central brain, and as having this power in unequal degrees.

The varieties of the sense of hearing furnish a basis of discrimination of the animal species. This sense is, perhaps, on the whole, less complex and less dignified than the sense of sight, but this last sense is more extensively possessed than the power of hearing. The development of the ear goes along with the development of the vocal organs, and there is a special connection between the two in the nervous system. When the ear and the voice are in tolerable perfection they are put to a variety of uses. Besides the employment of the voice in the expression of the animal emotion and in kindling up sympathies and inspiring terrors into fellow beings, it very soon shows itself as an organ of language, or as a means of communication between the different members of any society of animals.

The Secretary announced the following correspondence: —

From Amherst College Library, Dec. 13; E. P. Boon. New York, Dec. 9; Instituto Historico e Geographico do Brazil; Cincinnati Public Library, Dec. 21; Dresden Kais. Leop. Carol. Deutsche Akademie der Naturforscher, Oct. 29; Emden, Naturforschende Gesellschaft, Oct. 15; LeRoy F. Griffin, Hightstown, N. J., Dec. 22; Hague, Entomol. Soc. of Netherlands. Oct. 19; Liege, Societe Geologique de Belgique, Sept. 15; Liverpool Literary and Philosophical Society, Dec. 8; Lynn Public Library, Nov. 16; München. K. Bayerischen Akademie der Wissenschaften, Nov. 1; E. P. Robinson, Nov. 10; Stockholm. L'Acad. Roy. Suedoise des Sciences, Nov.; Charles P. Thompson, Washington, Dec. 17; Throndhjem K. Norske Videnskabers-selskab, July 15; Upsal, Société Royale des Sciences, Oct. 15, Nov. 15, 20.

At the close of the meeting, on motion of Mr. Wm. P. Upham, a vote of thanks was passed to Col. Oliver for his interesting communication.

The following persons were elected resident members: Mrs. D. B. Hagar, Mrs. C. H. Miller, Mrs. J. O. Safford, Mrs. D. W. Bowdoin, Harriet A. Austin, Hannah H. Silsbee, Horace N. Smith, Andrew D. Cross, Thomas H. Johnson., all of Salem.

REGULAR MEETING, MONDAY, JANUARY 17, 1876.

MEETING this evening. The PRESIDENT in the chair. Records read.

Mr. JOHN ROBINSON brought to the notice of the meeting the finding of the willow (*Sàlix discolor*) in blossom, stating that this was rarely the case in midwinter.

Mr. GEORGE M. WHITE, of Salem, read a paper on "Pottery," illustrating the same by some beautifully colored cartoons, prepared by himself, of some of the most celebrated specimens of pottery on record. He commenced by giving a brief sketch of the art in the earliest period of its history when the clay was made sufficiently hard for the simple wants of the people by exposure to the sun. The baking of the clay, so as to produce an indestructible tenacity was an immense stride, a rough and rude ornamentation was at that time adopted. Another step in the process was in rendering the vessels less porous and better fitted to hold liquids by covering them with an impervious glaze. Then followed the use of copper to obtain the brilliant blue enamel; other materials and processes were afterwards gradually introduced for the various kinds of ornamentation which was carried to so high a degree of perfection as to require the talents and skill of the most noted artists, and have become an almost inexhaustible source for illustrating the mythology, the history and the customs of the people.

A communication was read from Mr. JOHN J. HUTCHINSON, executor of the will of the late Miss ABBY W. DITMORE, in relation to the bequest therein noted.

On motion of Mr. A. C. GOODELL

Voted, That the Essex Institute will accept the bequest made by the residuary clause of the will of Abbie W. Ditmore, late of Salem, singlewoman, deceased, on the condition therein expressed, and will pay the income of the same to Frederick J. Perkins, cousin of said testatrix, during his life, and the Treasurer of said Institute is hereby authorized and directed to give a receipt for the same, and to pay the income thereof as required by said will during the life of said Frederick J. Perkins.

Voted, That said Treasurer be authorized to give bond to said executor to refund to said executor any part of said sum that may be recovered against said executor or said estate within two years of his acceptance of said trust.

On motion of Mr. R. C. MANNING it was

Voted. That the thanks of the Institute be given to Mr. George M. White for his handsomely illustrated lecture.

The following persons were elected resident members: Mrs. J. F. Tuckerman, Edward Kemble, Winchester Smith, Samuel C. Oliver, Mrs. F. H. Lee, Chas. Henry Andrews, Wm. Phineas Parker, Clarence Edward Murphy.

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SPECIAL MEETING, MONDAY, JANUARY 31, 1876.

THE PRESIDENT in the chair. The meeting this evening attracted a large audience.

Rev. E. S. ATWOOD gave an explanation of the manufacture of silver plated ware, illustrated by the elegant specimens which have recently been added to the technological department of the Institute through the generosity of Messrs. Reed and Barton, of Taunton, manufacturers, whose establishment ranks among the most distinguished.

The lecture was listened to with the utmost interest and closest attention.

The lecturer commenced with an allusion to the silver plating practised by the ancient Romans, the silver being soldered to copper and rolled out. This method was continued until the middle of the 18th century and was called the French process. He also spoke of the silvered wires for filigree work.

The French process was succeeded in England by fire-plating—silver fused upon copper without solder—known as the Sheffield process. In this the weight of silver was 1-24 to 1-30 that of the copper. This ware is remarkably serviceable and does not tarnish. A specimen more than a hundred years old was exhibited and the plating was apparently as perfect as when first made.

Amalgam plating was next described—silver and mercury mixed, the mercury volatilized.

The first electro plating, which is the modern process, was done in 1803, by Brugnatelli, a pupil of Volta. Elkington's patent was issued in 1840, and it was not until within twenty-five or thirty years that the manufacture began to assume its present proportions.

The general composition of the three bases, Britannia, German silver, and nickel silver was then given, Britannia being a compound of lead, tin, and antimony; German silver, of copper, zinc, and nickel; and so on.

The lecturer then took his audience into the manufacturing room and described the process by which the raw material is worked up into hollow ware, and spoons and forks, which latter is a special department of the business. The various methods of "chasing" were then considered, and silvered plates illustrating each variety were exhibited. The "plating" room was next described, with an enumeration of the various chemical and galvanic operations, employed at that stage of the work. Following this was a detailed account of the method of "burnishing," by which the lustreless silver is made to take on a high polish. The lecture closed with some practical directions as to the best way to buy, cleanse, and preserve the various articles of plated ware in use in the household.

A handsome tablet, containing specimens of the raw materials used, and of articles in various stages of manufacture, was among the donations by Reed & Barton, and the specimens, being removable, were, with the finished articles, passed around among the audience and enabled the listeners to follow the explanations with great satisfaction.

The Librarian reported the following additions to the library:—

By Donation.

Bolles, E. C. Miscellaneous pamphlets, 10.

Bunker Hill Monument Association. Proceedings of the. At the Annual Meeting, from 1861–1874. 1 vol. 8vo.

Calef, John. Boston Gazette, 1805, 1806. 2 vols. folio.

Chase, Anne A. Journals of Madam Knight and Rev. Mr. Buckingham, written in 1704–1710. 1 vol. 8vo.

Cole, Mrs. N. D. Salem Gazette, July–Dec., 1875.

Cook, James. Miscellaneous pamphlets, 17.

Emilio, L. F., of San Francisco, Cal. Report of the San Francisco Park Commissioner, 1874–75. 8vo, pamph.

Green, S. A., of Boston, Mass. Little Wanderer's Advocate, 1872. 1 vol. 8vo. Miscellaneous pamphlets, 7.

Greenwood, Isaac J., of New York. The Willoughby Family of New England. 8vo, pamph., 1876.

Jennison, O. A., of Lansing, Mich. City Directory, 1853, 1854. 1 vol. 8vo.

Kimball, James. Cape Ann Advertiser, Dec. 3, 10, 17, 24, 31, 1875.

Lee, John C. Commercial Bulletin, Oct. 30, Nov. 6, 20, 27, Dec. 4, 1875.

Merritt, L. F. Essex Co. Mercury, Dec., 1875.

Perry, W. S., of Geneva, N. Y. Journal of the General Convention of the Protestant Episcopal Church in the U. S., 1874. 1 vol. 8vo.

Putnam, F. W. Paper on Cylinder Condensation, by G. B. Dixwell. 8vo pamph.

Ropes, W, L., of Andover, Mass. Catalogue of Andover Theological Seminary, 1875–6. 8vo, pamph.

Shipman, Wm. R., of College Hill, Mass. Catalogue of the Officers and Students of Tufts College, 1875–6. 8vo, pamph.

U. S. Patent Office. Official Gazette, Nov. 16, 23, 30, Dec. 14, 28, 1875.

Waters, J. Linton. Miscellaneous pamphlets, 5.

By Exchange.

American Antiquarian Society. Transactions of. Vols. v, vi. 2 vols. 8vo.

Boston Society of Natural History. Proceedings of. Vol. xviii, sigs. 9, 10, 11, 1875.

Caen, France, Royale Academie des Sciences, Arts et Belles-Lettres. Memoires, 1875. 1 vol. 8vo.

Canadian Institute. Journal, Vol. xiv, No. 6, Dec., 1875.

Crosse et Fischer. Jurnal de Conchyliologie, Tome xv, No. 3, 1875.

Dresden, Naturwissenschaftliche Gesellschaft Isis. Sitzungs-Berichte Jahrg. 1874, Oct.-Dec.

Michigan State Library. Joint Documents, 1842. 1843, 1844, 1850, 1851, 1853, 1854, 1856, 1857, 1858, 1859, 1860, 1861, 1862. 1863, 1864, 1865, 1866, 1867, 1868. 1869. Laws of Michigan, 1845, 1857, 1858, 1861, 1862, 1867, 1869, 1870, 1871, 1872. Senate Documents, 1853, 1855, 1857, 1859, 1861, 1863, 1865. House Journal, 1849, 1858 1859, 1861, 1863, 1864, 1865, 1867, 1869, 1870, 1871. Senate Journal, 1850, 1857, 1858, 1859, 1861, 1863, 1864, 1865, 1867, 1869, 1870. Senate and House Documents, 1843, 1853, 1862, 1867, 4 vols. 8vo. Revised Statutes of Michigan, 1 vol. 8vo. Geological Survey of Michigan, 1860, 1 vol. 8vo. Census of Michigan, 1874, 1 vol. 8vo. Statistics of Michigan, 1870, 1 vol. 8vo. Catalogue of Michigan State Library, 1875–76, 1 vol. 8vo. State Board of Health, 1873–1874. 2 vols 8vo. Registration Reports, 1 vol. 8vo. Michigan Pomological Society. 1871–72, 1873, 1874, 4 vols. 8vo. Michigan Board of Agriculture, 1865, 1866, 1867, 1870, 1871, 1872, 1873, 1873–4, 7 vols. 8vo. Michigan Insurance Reports, 1871, 1872, 1873, 4 vols. 8vo. Compiled Laws, 2 vols. 8vo. Convention Journal, 1867, 1 vol. 8vo. Edmund's Impeachment Trial, 2 vols. 8vo. Michigan School Reports, 1865. 1866, 1869, 1871, 1872, 5 vols. 8vo. Report of Superintendent of Public Instruction, 1873, 1 vol. 8vo. Public and Local Acts of Michigan, 1874, 1 vol. 8vo. Public Acts, 1875, 1 vol. 8vo. Local Acts, 1875, 1 vol. 8vo. Convention Debates, 1867, 2 vols. 4to. In all 178 volumes, and 75 Miscellaneous Pamphlets.

Michigan Geological Survey. Vols. i, ii, 1869–1873, 2 vols. 8vo, Maps.

N. E. Historic-Genealogical Society. Register, Jan., 1876. Diary of Dr. Ezra Green. Centennial Orations, 1874–1875, 1 vol. 8vo.

Paris, France, Institut Historique. L' Investigateur Mai-Août, 1875.

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Publishers. American Journal of Science and Arts. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Salem Gazette. Salem Post. Salem Register. Gardener's Monthly. Gloucester Telegraph. Lynn City Item. Peabody Press. Salem Observer. Medical and Surgical Reporter. Turner's Public Spirit.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., FEBRUARY, 1876. No. 2.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, FEBRUARY 7, 1876.

Meeting this evening. The PRESIDENT in the chair. Records read.

Mr. S. G. W. BENJAMIN of Boston gave a lecture on "The Theory and Practice of Art," which was attentively listened to by a large and appreciative audience.

The high expectations which the lecturer's reputation as a writer had excited, were not disappointed. The paper presented was an eminently able and finished production, giving, in terse and attractive style, a vast deal of information to the uninitiated in art matters.

The lecturer commenced with a brief statement of the development of interest in the fine arts, in America, during the last quarter of a century, and warmly commended the progress that had been made. But by the very rapidity of that progress we are in danger of being superficial, a danger to be guarded against by understanding the real character and scope of art.

Art was defined as the offspring from the poetic yearnings and emotions suggested by aspirations after the true, the good, and the beautiful. In the strict meaning of the term, it is the appeal to the imagination through the eye, by means of external forms. Religious architecture has been in the past the first of the arts to receive attention. Sculpture follows and then the arts of design. Only the highest art is cosmopolitan. The criticism was passed upon French art that it confines itself to the expression of the beautiful, while the Germanic races make place for the moral element. The IDEAL is the ultimate aim of art, and no technical excellences can atone for its absence. The fine arts and the industrial arts, it was claimed, stand on the same level, when the expression of the beautiful is the common aim. Cellini is no more an artist when he executes his silver statue of Perseus, than when he designs his silver salt cellar for Francis First. The limitations and modes of art were next discussed. The plastic arts and the arts of design constitute the two grand divisions. The three grand limitations are form, light and shade, and color. The arts of design include form, color, and light and shade, and, requiring for their perfection the whole art triad, deservedly take the highest rank.

Color was declared to be the EMOTIONAL element in painting. In some people it awakens the same feelings as music. Scarlet is the emblem of rage. Turner added awful significance to his picture of the slave ship, throwing slaves overboard, by representing the sun, the hue of blood, sinking low down over a gray waste of angry sea. Black and white are hues in harmony with our more solemn emotions. Color appeals more to the soul than to the intellect. A scientific knowledge of chromatic effects is essential, and comes only as the result of study, observation and practice.

In the application of these fundamental principals of the arts of design to practice, four points are to be mastered: perspective, tone, values, and composition. Perspective is linear and aerial; the former founded upon the convergence of imaginary geometric lines, the latter a matter of feeling and observation. Tone is a term borrowed from music, suggested by the limited power of material colors to give the impression of light. White is the starting point, and everything in the picture has to be pitched on that key. The stronger the effect required, the lower must be the tone. The term "values" is used to indicate the equilibrium between a given effect and the materials at command. Only great artists can disregard them with safety. Composition is the application of all these principles to the conception of a work of art. Examples were given of artists who had excelled in each or all of these particulars. Artists as a whole are agreed upon these theories, but differ when they come to reduce them to practice; and on this point a very sharp and deserved criticism of many art critics was given. The least diversity between theory and practice is found in the plastic arts. In regard to the arts of design there is endless controversy. A consideration of the comparative merits and demerits of water colors and oil pigments followed, and the excellences of each stated, the large preference in point of dignity and durability being given to paintings in oil. In this department every great artist has his own method of employing colors.

The lecturer then explained the importance of careful study and application, while at the same time the superhuman power of real genius was admitted. This point was exquisitely illustrated by a description of a church spire in Brittany, "a tower from whose floor one looks up to the finial at the extreme top, through a hollowed shell of stone tracery work three hundred feet high, entirely clear of brace or buttress, pier, beam, or bracket, nothing to break the astonishing sight but the doves flying in the dizzy cavity, and the sun flashing here and there through the open carvings, while the wind breathes, from age to age, a grand æolian chant through that organ of granite."

The comparative merits of painting from models, or from memory and imagination, received attention, and great stress was laid upon the importance of proficiency in drawing, before attempting to work in colors. The proper canons of art criticism and judgment on the part of the general public were very succinctly and fairly stated. It should be unprejudiced, and take into account the artist's purpose, with constant remembrance that we may be tempted to condemn what is really admirable in its way, but not addressed to our personal taste, which may be one-sided and partial.

The lecture closed with a brilliant characterization of art, as the embodiment of the "life blood of master spirits," as a historic record, giving events an immortality in form and color, and as a minister to man's highest nature. It was finely written, and well delivered, and those who were not present may comfort themselves with the thought that they missed one of the most exhaustive and instructive lectures that has ever been given in Salem.

W. H. Simonds, Jr., of Salem, and E. P. Robinson of Saugus were elected resident members.

REGULAR MEETING, MONDAY, FEBRUARY 21, 1876.

MEETING this evening. The PRESIDENT in the chair. Records read.

The new draft of the By-laws was read, as follows:—

ARTICLE I.—MEMBERS.

SECTION 1. Any person may be elected a member, at a Regular Meeting by a majority of the members present and voting, the name of such person having been proposed in writing by two members at a previous meeting.

SECT. 2. Any person not residing in the County of Essex may be elected a corresponding member upon nomination by the Board of Directors, but corresponding members shall not be eligible to office, or entitled to vote. Any member removing from, or residing out of the county, may become a corresponding member, by giving notice of his intention and paying all arrears.

ARTICLE II.—OFFICERS.

SECTION 3. The officers shall be a President, four Vice-Presidents, a Secretary, a Treasurer, an Auditor, a Librarian, and Curators of Departments who, with the Chairmen of the Standing Committees, shall be the Board of Directors.

SECT. 4. The Board of Directors may appoint an Associate Curator of any department upon nomination of the Curator of the same department; and may appoint an Assistant Librarian, upon nomination of the Librarian. But the appointment of such Associate or Assistant, shall not make him a member of the Board of Directors.

SECT. 5. The Board of Directors may at any time remove an Associate Curator or Assistant Librarian.

ARTICLE III.—COMMITTEES.

The following Committees shall be chosen at the Annual Meeting:

SECTION 6. A Finance Committee (of which the President shall be *ex officio* Chairman, and the Treasurer *ex officio* a member), to have the direction of the funds of the Institute, in accordance with the Act of Incorporation, and of such investments of funds as may be necessary.

SECT. 7. A Library Committee (of which the Librarian shall be *ex officio* a member), who shall make an annual examination of the condition of the Library.

SECT. 8. A Committee on Publications, who shall have the management of all publications of the Institute, and regulate the manner of their distribution.

SECT. 9. A Lecture Committee, who shall have charge of all lectures and public meetings, except such as may be held or given for the benefit of a special department of the Institute, and except Field Meetings.

SECT. 10. A Committee on Field Meetings (of which the Secretary shall be *ex officio* Chairman) who shall determine when and where Field Meetings shall be held, and shall have the general management of the same.

SECT. 11. Each of these Committees, unless herein otherwise provided for, shall choose a Chairman, whose election shall be immediately certified to the Secretary, and such election shall constitute him a Director.

SECT. 12. The several Committees shall report at the Annual Meeting.

ARTICLE IV.—DEPARTMENTS.

The Management of the Institute shall be divided into the following Departments:—

SECTION 13. The Department of History, which shall include Historical Materials and Antiquities.

SECT. 14. The Department of Manuscripts.

SECT. 15. The Department of Archæology, which shall include Ethnology.

SECT. 16. The Department of Numismatics.

SECT. 17. The Department of Geology, which shall include Mineralogy, and Palæontology.

SECT. 18. The Department of Botany.

SECT. 19. The Department of Zoölogy.

SECT. 20. The Department of Horticulture.

SECT. 21. The Department of Technology.

SECT. 22. The Department of Music.

SECT. 23. The Department of Art, embracing Painting, Sculpture, and Engraving.

ARTICLE V.—MEETINGS.

SECTION 24. Regular Meetings shall be held on the first and third Mondays of each month, at the Rooms of the Institute, at 7½ o'clock, P. M. The second meeting in May shall be the Annual Meeting.

SECT. 25. Special Meetings may be called by order of the President, or at the written request of five members. Business to be transacted at a special meeting shall be limited to the subjects stated in the call.

SECT. 26. Field Meetings shall be held at such times and places as the Field-meeting Committee may designate.

SECT. 27. The Board of Directors shall meet on the first and third Mondays of each month, at 7 o'clock, P. M., at the Rooms of the Institute, and at such other times as they may be called together by the President.

SECT. 28. Five members shall be a Quorum for holding any meeting of the Institute, or of the Board of Directors, but any less number, of whom the Secretary shall be one, may have power to adjourn the meeting.

SECT. 29. Officers shall be elected at the Annual Meeting, but vacancies may be filled by election at any Regular Meeting.

SECT. 30. All Elections shall be by ballot, and by a majority of the members present and voting.

ARTICLE VI. — DUTIES OF OFFICERS AND COMMITTEES.

SECTION 31. The President, or in his absence one of the Vice-Presidents, shall preside at all meetings of the Institute, and of the Board of Directors. The President shall be *ex officio* Chairman of the Finance Committee.

SECT. 32. The Secretary shall give notice of all meetings and record their proceedings; shall notify all members and officers of their election; shall have charge of all papers and documents relating to the general business of the Institute; shall conduct the general correspondence; and shall report the doings of the Institute during the year, at the Annual Meeting. He shall acknowledge the receipt of all donations except those to the Library. He shall record in a book kept for that special purpose the By-laws of the Society and the names of its members, with the date of their election, and whenever any alteration, amendment, or repeal of the By-laws is made, the same shall be entered in said book. He shall be *ex officio* Chairman of the Field-meeting Committee, and shall perform such other duties as the Board of Directors shall from time to time designate by vote.

SECT. 33. The Treasurer shall be *ex officio* a member of the Finance Committee, and shall keep an exact account of all his receipts and expenditures, and shall submit his report, after examination by the Auditor, at the Annual Meeting.

SECT. 34. The Auditor shall audit all accounts of the Treasurer, Curators and Committees, and shall report at the Annual Meeting.

SECT. 35. The Librarian shall be *ex officio* a member of the Library Committee. He shall receive, and have the custody of, all books and other printed works, maps, charts, and diagrams of the Institute; shall attend to their arrangement, cataloguing and preservation; shall conduct the correspondence relating to the Library and acknowledge all donations thereto; and shall report on its condition at the Annual Meeting.

Sect. 36. The Library Committee shall divide the books, and other articles, belonging to the Library, into two classes; namely, (A) those which are not to be removed from the building, except upon the written permission of the Library Committee; (B) those which may circulate under such rules as may be prepared by the Library Committee, and approved by the Board of Directors, which rules shall have the force of By-laws. A copy thereof shall be pasted on the cover of each volume.

Sect. 37. The Board of Directors shall have full power to transact all the general business of the Institute, except the election of members and officers; and may, when they deem it best, refer any matter to the general meeting of the Society for its action. They shall decide, subject to the control of the Society, how and when the general resources of the Society, not devoted to any particular department, shall be expended; and shall assign all space or location of specimens for each Department, and shall determine all questions that may arise between any of the Curators.

Sect. 38. The Curators shall have charge of their respective Departments, and shall have full power relating to the collection, care and preservation of the specimens or materials relating thereto: provided, however, that any alteration of the general plan or principle of arrangement of any department and the removal of specimens or other material except for the purpose of exchange, shall be made only with the consent of the Board of Directors, or under such regulations as they may, from time to time, prescribe. Curators shall have charge of all Lectures, Exhibitions, or Entertainments, given for their respective Departments. All moneys or funds that may at any time be raised by any Curator, or that may come into his hands for the benefit of his Department, and the net proceeds of any Lecture, Exhibition or Entertainment under his charge, shall be deposited by him with the Treasurer, who shall give him a receipt therefor, and place the amount to the credit of that Department. Each Curator shall have authority to draw upon the Treasurer from time to time, for the purposes of his Department, to the amount standing to its credit; excepting, however, such funds as may be permanently invested, of which the income only, shall be subject to such authority. Each Curator shall report on the condition and wants of his Department, at the Annual Meeting.

ARTICLE VII. — ASSESSMENTS.

Section 39. An assessment of three dollars shall be paid by every member on admission, and annually thereafter on the third Monday in May.

Sect. 40. No member who shall be in arrears for one year shall be entitled to vote or hold any office; and any member so in arrears, who shall refuse or neglect to pay his dues for six months after being notified thereof by the Treasurer, by written notice duly recorded, shall cease to be a member of the Institute. *Provided*, however, that any member may, in lieu of the annual assessment, pay the sum of *thirty dollars*, to be added to the funds of the Institute, the annual interest thereof to be considered as the payment of the annual assessment of said member.

Sect. 41. Members elected more than four months, and within eight months after an Annual Meeting, shall have one dollar deducted from the next annual assessment; and members elected eight months or more after an Annual Meeting, shall have two dollars deducted from the next annual assessment.

Sect. 42. The President and Treasurer may exempt members from assessments, when they may deem it for the interest of the Society.

ARTICLE VIII. — APPROPRIATIONS.

Section 43. No Member, Officer, or Committee, except the Board of Directors, shall incur any debt whatever in the name of the Institute; but whenever money shall be expended under any appropriation, an account of receipts and expenditures, with the vouchers therefor, shall be rendered to the Treasurer by the party having the same in charge, and the net receipts, if any, shall be paid into the Treasury within thirty days after the object for which the appropriation was made shall have been accomplished.

Sect. 44. When no appropriation shall have been made, a statement of all receipts and expenses incurred shall be made to the Treasurer in like manner; and when all bills shall have been paid, the net receipts shall be turned over to the Treasurer, unless it have been otherwise previously ordered by the Board of Directors. The Board of Directors may, in either case above named, in the name of the Institute, assume all liability for any such debt as may be outstanding, when the balance of said receipts shall have been placed in the Treasurer's hands; provided they are satisfied that the gross receipts exceed all expenses incurred by the party in charge, and that the business or entertainment has been previously authorized by the Institute or the Board of Directors.

ARTICLE IX. — ROOMS.

Section 45. The Rooms shall be open to members and the public at such times and under such regulations as the Directors may determine.

Sect. 46. Visitors may be introduced by any member.

ARTICLE X. — AMENDMENT OR ALTERATION OF BY-LAWS.

Section 47. The By-laws may be altered, repealed or amended by the votes of two-thirds of the members present and voting, at a Regular Meeting, notice of the proposed alteration, repeal or amendment, having been given in writing at a previous Regular Meeting.

The Secretary announced the following correspondence: —

From American Antiquarian Society, Jan. 22; E. T. W. Baker, Dorchester, Feb. 11; S. G. W. Benjamin, Boston, Jan. 25, Feb. 9; N. H. Chamberlain, Cambridge, Feb. 9; C. F. Crocker, Lawrence, Feb. 11; Frank M. Etting, Philadelphia, Penn., Feb. 10; V. A. de Gourguez, Bordeaux, Jan. 25; R. M. C. Graham, New York, Jan. 21; J. C. Holmes, Detroit, Mich., Jan. 4; T. H. Johnson, Jan. 6; D. B. Kimball, Jan. 4; A. R. Knight, Dec. 27; E. D. Marchant, Boston, Feb. 17; John T. Moulton, Lynn, Jan. 4, Feb. 18; J. Munsell, Albany, N. Y., Jan. 29; J. D. Philbrick, Boston, Dec. 30; Rantoul Literary Society, Rantoul, Ill., Jan. 19; E. P. Robinson, Saugus, Feb. 11; John Robinson, Jan. 19; St. Petersburg, Jardin Imperial de Botanique, Dec. 19; Salem, Ladies Centennial Committee, Jan. 8; Horace N. Smith, Jan. 5; M. E. Williams, Jan. 27.

The Librarian reported the following additions: —

By Donation.

Bleck, E. F., of Bethlehem, Pa. Miscellaneous pamphlets, 9.

Cutler, A. E., of Charlestown, Mass. Report of the Managers of the Winchester Home Corporation, Jan., 1876. 8vo pamph.

Frothingham, Richard. The Battle Field of Bunker Hill. 8vo pamph.

Green, S. A., of Boston, Mass. Miscellaneous pamphlets, 8.

Holmes, John C., of Detroit, Mich. The Detroit Conglomeration, Jan. 31, Feb. 1, 2, 3, 4, 5, 7, 1876.

Humphreys, A. A. of Washington, D. C. Report of the Chief of Engineers, 1875. Vols. I, II. 2 vols., 8vo.

Hunt, Mrs. T. U. S. Naval Astronomical Expedition. 2 vols., 4to. Report on the U. S. and Mexican Boundary. 1 vol., 4to. Miscellaneous pamphlets, 50.

Hunt, T. F. Log Books, 2.

Kimball, James. Dialogues on Theology, by D. N. Prime. 1 vol., 12mo. Cape Ann Advertiser, Jan. 7, 14, 21, 28, Feb. 4, 11, 1876.

Lee, Francis H. Miscellaneous pamphlets, 45.

Manning, R. C. Boston Advertiser for Jan., 1876.

Palfray, C. W. Miscellaneous pamphlets, 58.

Robinson, John. Miscellaneous pamphlets, 112.

Thompson, Chas. P., M. C. Wilson's Report on the Credit Mobiler. 1 vol., 8vo. Report Poland Committee. 1 vol., 8vo. Smithsonian Report, 1874. 1 vol., 8vo. Report of the Commissioner of Education, 1874. 1 vol., 8vo.

U. S. Bureau of Navigation. Astronomical and Meteorological Observations for 1873. 1 vol. 4to.

Waters, J. L. Miscellaneous pamphlets, 15.

Williams, James, of Columbus, Ohio. Report of the Auditor of State, 1875. 1 vol., 8vo.

By Exchange.

American Philosophical Society. Proceedings of. Vol. xiv, No. 95. June-Dec., 1875.

American Geographical Society. Bulletin, 1875–76. No. I.

Boston Public Library. Bulletin for January, 1876.

Boston Society of Natural History. Proceedings. Vol. xviii, Jan., 1876.

Buffalo Society of Natural Sciences. Bulletin. Vol. iii, No. II. 1875–6. 8vo.

Dresden, Naturwissenschaftlichen Gesellchaft-Isis. Sitzungs-Berichte Jahrg., 1875. Jan.-Juin.

Dresden, Verein fur Erdkunde. xii Jahresbericht. 1875.

Emden, Naturforschenden Gesellschaft. Sechzigster Jahresbericht, 1874. 8vo.

Harvard College. Report of the President and Treasurer of, 1874–75.

Leeds Philosophical and Literary Society. Annual Report, 1874–5.

Liverpool Literary and Philosophical Society. Proceedings. No. xxix. 1874–75.

London Royal Society. Proceedings of. Vol. xxii. Nos. 151-155. Vol. xxiii. Nos. 156–163. 1874–75.

New England Historic-Genealogical Society. Proceedings of the. Jan. 5, 1876. Brief History of the, N. E. Historic-Genealogical Register, 1847–76.

N. Y. Genealogical and Biographical Society. Record. Vol. vii, No. 1. Jan., 1876.

N. Y. State Library. Report of the Trustees of the. 1874. 1 vol., 8vo. Report of the Regents of the University, 1874. 1 vol., 8vo. Report of the Regents of the University on the boundaries of the State of N. Y., 1873. 1 vol., 8vo.

Peabody Academy of Science. Memoirs of the. Vol. i, No. IV. Dec., 1875.

Somersetshire Archæological and Natural History Society. Proceedings for 1874. Vol. xx. 1 vol., 8vo.

Stockholm, Konegliga Svenska Vetenskap-Akademien. Handlingar, Band 9, 10, 12, 1870, 1871, 1873. Oversigt, Vol. 20, 29, 30, 1871–1872–1873. Bihang, Band I, No. 1, 2, 1872; Band II, No. 1, 2, 1873. Lefnadsteckningar, Band Hafte 3, 1869–73.

St. Gravenhague, Entomological Society of the Netherlands. Tijdschrift Voor Entomologie, Vol. 17, 1873–74.

Throndjem Konegelige Norske Videnskabers-Selskab. Aarsberetning for 1874.

Upsal Societe Royale des Sciences. Nova Acta. Ser. iii, Vol. ix, Fasc. I, II, 1874–1875. Bulletin, Vol. v, Nos. 7–13, 1873. Vol. vi, 1874.

Vermont Historical Society. Governor and Council. Vol. 3, 1782–1791. 1 vol., 8vo.

Vermont State Library. Senate Journal, 1874. 1 vol., 8vo. House Journal. 1874. 1 vol., 8vo. Transactions Dairymen's Association, 1875. 1 vol., 8vo. School Laws of Vermont, 1875. 1 vol., 8vo.

Wisconsin State Historical Society. Annual Report, 1876.

Publishers. American Journal of Sciences and Arts. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn City Item. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Observer. Salem Post. Salem Register. Turner's Public Spirit.

The President introduced Rev. N. H. Chamberlain, of Cambridge, who delivered an entertaining lecture on

"The way of making orators." Mr. Chamberlain traced the history of oratory and public speaking from an early age to the present time, and in this connection gave a brief but interesting sketch of the life of Francois Delsarte, the founder of "the Practical School of Æsthetics and Art" in Paris, which was very celebrated; reciting particularly some of the incidents of Delsarte's early days, his many bitter struggles and disappointments, the success that attended his first appearance on the stage, his subsequent brilliant career as a singer and actor until an impaired voice compelled him to retire; the subsequent devotion to his studies and to the establishment of his school. Delsarte was a descendant of the Delsartos of Italy; born in the north part of France, Nov. 11, 1811, died July 20, 1871.

The lecturer claims to be a believer in Delsartism, and said it had been called a science, and in his opinion justly. Mr. Chamberlain gave several short readings and recitations showing the difference between a correct and faulty rendering of the various passages.

At the close of the lecture on motion of Mr. W. P. Upham, a vote of thanks was passed to Mr. Chamberlain for the lecture delivered this evening.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., MAR., APR., MAY, 1876. NOS. 3, 4.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, MARCH 6, 1876.

Meeting this evening. The PRESIDENT in the chair. Records read.

WILLIAM P. UPHAM, Esq., read a very interesting paper narrating

INCIDENTS DURING THE OCCUPANCY OF BOSTON BY THE BRITISH TROOPS IN 1775-6.

These incidents were gleaned from many family letters, journals, diaries, etc., that had recently come into his possession, or had been loaned to him for the preparation of this paper.

Among them were many letters written at that period to Oliver Wendell, a merchant in Boston at the time of the Revolution. Mr. Wendell was in consultation with the early patriots of the Revolution, and contributed to the country's liberty and independence. He was for sometime one of the Selectmen of Boston, was often a member of the Senate and of the Council under the Constitution, and was for many years the Judge of Probate for the County of Suffolk. He was residing, January 1, 1775, on the corner of School Street opposite the King's Chapel.

The shutting up of the port of Boston by the Boston Port Bill, June 1, 1774, produced the greatest suffering and distress, and aroused the intensest indignation throughout the whole country. The people could not submit; there was a feeling that the evils of war were imminent; "and a gloom settled upon the inhabitants of Boston and the surrounding towns which is reflected from the correspondence and journals of the time." On the 19th of April, 1775, all intercourse between the people of Boston and the country was cut off by order of Gen. Gage; but on the 22d an agreement was made that the inhabitants might, upon surrendering their arms, "leave the town with their families and effects, and those who remained might depend upon the protection of the Governor." Gage subsequently violated this agreement, at first obstructing such removals and finally denying passes for that purpose.

A century has passed since the occurrence of the facts which were here recited, and although our country, during that interval, has several times been engaged in war, especially in the recent civil conflict (1861–65), yet the scenes have been so far removed from our hearth and homes that we know but little of its direful effects, and consequently can scarcely realize the trying events that our ancestors were encountering at the opening of the Revolutionary struggle, the centennial anniversaries of the leading events of which are now in process of a due commemoration by a grateful posterity. Much has been written on these subjects, and the admirable work of

Hon. Richard Frothingham on the Siege of Boston seems to be almost exhaustive, yet the recital of the daily notes and record of events, either in letters between members of the same family, or those engaged in close business connections, or in diaries, give an insight into the inner life of the people which has necessarily escaped, to a certain extent, the notice of the historian or the annalist.

Mr. Upham spoke about an hour and was listened to with marked attention by an appreciative and large audience.

The PRESIDENT, Mr. A. C. GOODELL and others, spoke in continuation of the subject, and expressed much interest in the communication, which was referred to the appropriate committee for publication in the Historical Collections of the Institute.

The new draft of the By-laws was passed through its second reading.

WEDNESDAY, MARCH 8, 1876.

THIS evening, A. H. JOHNSON, M. D., gave the first of his series of lectures

ON THE RELATION OF MIND TO THE NERVOUS SYSTEM.

The lecture, which was mainly introductory, presented such anatomical details, illustrated by diagrams, as were necessary to the full comprehension of the lectures to follow. The diagrams alone, exhibiting the comparative anatomy of a dozen brains of different animals, furnished conclusive evidence for the speaker's theory, that mental power generally corresponds to the size and quality of the cerebrum. The doctor confined himself closely to facts, and wasted no time whatever over theories, and his lectures will do much good by attracting attention to the subject, and furnishing indisputable facts.

Our conception of a human being, the lecturer said, necessarily embraces not only a mind with its characteristics, but also a physical frame with its attributes and accomplishments. The animal and the spiritual, the physical and the mental, whatever may be the degree of their distinctness, the measure of their independence, or the method of their connection, are indisputably united. "What God hath joined together, let no man put asunder." If one would understand the laws and workings of the human mind, he should study it in its connections with the body with which it is so intimately blended. It is in such a study that the lecturer proposed to offer a little help. An intelligent discussion of physiological facts presupposes some knowledge of anatomy. To insure a clear understanding of the facts with which we are especially to deal, it is necessary to somewhat particularly describe the structure and operations of the nervous system.

Wednesday, March 15, 1876.

This evening was given the second of Dr. Johnson's series of lectures. In continuation of the physiological portion of his subject, the lecturer brought forward facts to show that the functions of the brain must largely depend upon the character of its blood supply. From these and facts adduced at the previous lecture it appears that some thought does not require us to suppose it to be the activity of a soul using the brain as an instrument.

He assumed that it was generally conceded, that the mental faculties of animals are not the manifestations of a spiritual nature. Since the human brain, the special organ for intelligent life in animals, appears in a much more highly developed form in man, we are justified in considering it capable of producing mental phenomena of a higher grade and perfection. That we have, in addition to the physical mental faculties which we hold in common with the lower animals, a spiritual nature, which merges in, harmonizes with and controls them, and that this spiritual nature, together with the experience it gains through connection with our physical bodies is imperishable, is a truth of revelation.

The lecturer then copiously illustrated the automatic action of the brain, some of the conditions under which it occurs, and its effects in the production of illusions, through its action upon the sensorium (or ganglia at the base of the brain), as explained by Dr. Carpenter.

The inhibitory action of the brain, first demonstrated by Brown Sequard, was then explained and discussed with special reference to the inhibitory action of predominating thoughts.

Turning from the more strictly physiological portion of his theme, the lecturer sought first to remove objections to the facts he had presented, raised by those who fear that they may be used to remove moral responsibility by representing man as a mere product of material forces.

He showed that physiological facts do not and cannot deny the existence of a soul, nor do they account for the soul's origin or existence.

Whether a large number of our mental faculties have been prepared for us by the slow process of development and evolution, is immaterial.

The *product* and its *future* we esteem above the manner in which it came into existence.

REGULAR MEETING, MONDAY, MARCH 20, 1876.

MEETING this evening. The PRESIDENT in the chair. Records read.

Mr. JOHN ROBINSON gave an interesting and instructive lecture

ON FERNS.

Mr. Robinson has made the study of ferns a specialty, and has in his greenhouse an extensive collection, specimens from which were exhibited, much to the gratification of the attentive audience.

Mr. Robinson commenced by stating in what part of the vegetable kingdom the ferns stood, as compared with other plants, particularly those called flowerless, or Cryptogams. He said it was difficult to draw the line between the various orders of this great class of plants, and that they can hardly be separated from the flowering plants by any clear line, as the higher orders of the cryptogams approach so nearly the lower orders of flowering plants. Commencing with the spore, or seed, it was followed through all its stages of growth. The root, stem, and fronds were duly considered; the different modes of fruiting were spoken of and compared; and in closing an account was given of the natural distribution of ferns and the places most favorable to their production and growth.

The lecture was illustrated by excellent diagrams, and also by living specimens of tropical ferns.

Messrs. T. J. Hutchinson and William S. Hutchinson of Salem and M. M. N. Fiske of Ipswich were elected members.

The new draft of the By-laws having been read at two previous regular meetings, passed its third reading and Dr. Wm. Neilson moved:

That the By-laws as now read be accepted and adopted as the By-laws of the Essex Institute, in lieu of the former Constitution and By-laws, which are consequently repealed.

This motion was then put in the form of a vote and was unanimously adopted.

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Wednesday, March 22, 1876.

Dr. A. H. Johnson gave the third lecture of his course this evening. He said that anxieties arise lest any admission of a physical basis for much of mental life should destroy convictions of man's moral responsibility. Perversions of physiological facts may lead indiscreet persons into a ruinous fatalism. So may a perversion of the doctrine of divine leniency lead some into reckless living. Properly applied, the truths concerning the dependence of mental and spiritual power upon our physical organization more exactly define the limits of moral obligation. While corporeal states and measure of nerve power may determine possibilities and obligations in moral and religious experience, the origin of these bodily conditions enables us to determine when and where to attribute guilt.

A dyspepsia which poisons the whole conception of duty may have been innocently incurred, in which case it will excuse misconceptions of privilege and duty. But if excesses in food, or recklessness as to the time of eating, or a waste of energies have occasioned the disorder, here a point of responsibility for mental depression is found, and also a place indicated at which corrections for the existing evil should be applied. If in the one case the fact of a morbid state of the body removes the obligation to feel courageous and hopeful, it also indicates in the other case the obligation to use conscientiously the means to maintain bodily health.

A full recognition and wise teaching of the anatomical and physiological relations of the mind, so far from weakening, will on the contrary strengthen the sense of moral responsibility. If by such learning, the range of our responsibility becomes limited in one direction it becomes increased in many others. With a more exact definition of the bounds of obligation, words of comfort and encouragement may change places with words of condemnation, but the moral struggle of the will against perverse inclinations will still go on, although its method may be changed.

Having answered some objections to a statement of the physiological relations of the mind, the lecturer then said that a study of the structure and functions of the nervous system led to conclusions which profoundly affect the relative moral value of various mental experiences. The emotions we have in common with the lower animals. They are the physical response to ideas which originate either from impressions received from external objects or from the mind. They are the excitation of the physical organization. This fact would seem to indicate the low order of emotional experiences in themselves considered. The emotions should not be confounded with the appetites on the one hand, nor the affections on the other. Appetites are desires for some bodily gratification. The affections lie as far above emotions as the appetites do below. Emotions are transient states. Affections are persistent associations of the mind with certain objects and inclinations towards these objects. The very nature of mere emotion reveals its moral worthlessness. In itself considered it has no more moral significance than muscular spasms. The morality of an emotion depends upon our choices to contemplate the object which calls it into exercise.

After eulogizing the power and value of the emotions in moral and religious reforms, the lecturer said that it was manifest that the temptation to abuse them has a manifold power. The proper order for moral and religious instruction is clearly indicated. We must address our efforts to give and guide thought fitted to excite feelings. To reverse this order is fraught with danger. It is not only to put a mere outward expression in the place of an internal reality, but it is to set loose a force whose intensity we do not know and the direction of whose working may be toward moral disaster instead of moral life.

Having explained and variously illustrated this statement, the lecturer then passed to the discussion of the mystical interpretations which certain morbid and startling disturbances of the mind had received from those who were ignorant of their physical origin. De Quincey's passionate love for the three-years-old daughter of Wordsworth and the visions of her form to which he was subject; Pascal's visions, his belief in their supernatural origin, and the ascetic life he led in consequence; Luther's interviews with Satan and the preposterous conclusions to which they led him,—were adduced to illustrate how nervous disturbances may lead to spectral illusions, while the last two instances show that dangers attend a too ready belief in the supernatural origin of remarkable mental experiences.

These experiences, when they occur in persons whose characters and piety we respect, if they have a reverent form, we are too much inclined to accept as the result of an extraordinary divine influence. What appears so harmless when endorsed in certain hallowing connections, may, having once obtained high sanction, reveal a widely pernicious influence if its testimony be claimed under other circumstances.

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WEDNESDAY, MARCH 29, 1876.

Dr. A. H. JOHNSON's fourth and last lecture on The Relation of the Mind to the Nervous System was delivered this evening.

The lecturer said that the state of the various tissues, fluids, viscera, and functions of the body are almost constant factors in mental products. The customary diet, the habitual practice in the use of food, may have quite as much influence as scholastic training in deciding for a life-time the spirit, methods, and direction in which mental powers shall be exerted. It is not needful to induce all the prominent symptoms of dyspepsia, before the mind will show that things so vulgar as the components of the daily meals are toning, and limiting, and almost dictating its action.

Indifference to literary pursuits, flagging enthusiasm in mental work, impatience in analytic thought, easy, superficial, inefficient study of facts and truths with which one is especially called to deal, are not always indications of defects in *direct* mental training; they may be symptoms of the oppression of various organs which are vainly seeking to rid the body of refuse and superfluous nourishment. Overwork in the digestive organs may produce a more or less complete inhibitory action upon the brain. A certain amount of nervous action is required to carry on the process of digestion.

The mind is likely to be trained according to the measure of elasticity and freedom allowed it after the general functions of the body have appropriated what nerve power they require. The *persistency* of bodily sensations may give them an educational power more potent in deciding spontaneous mental action than the drill of studies.

Among the agencies which very strikingly affect mental power and dispositions is the state of the air by which the body is surrounded. A warm temperature produces its repressive action upon the mind by the effect of heat upon the vasomotor system of nerves. Variations in the *purity* of the air, even more markedly than changes in its temperature, modify the action of the brain. It has been found that eloquent harangues were far from being as efficacious in dispelling apparent spiritual apathy and obduracy, as an abundant supply of fresh air. Drowsy brains, in ill-ventilated rooms, may blunt the points of the most piercing shafts of truth.

Physical exercise, other things being equal, so directly determines the quality, amount and pressure of blood in the head that its effects upon the development and action of the brain become very apparent. Beneficial as physical exercise proves itself to be, if it be too severe, continuous, or prolonged, it may arrest mental activity. So also intense efforts of the mind may arrest physical development. The proper co-ordination of these two departments of nervous life needs a careful consideration. For the highest equable development of both the physical and mental powers, their exercise must be properly proportioned. The special culture of either generally results in the impoverishment of the other. The undoubted healthful influence of gymnastic exercises and athletic sports both upon the mind and upon the body should not be allowed to blind us to the evils arising from their abuse.

Having illustrated the dependence of mental activity upon the character and quantity of food, upon the purity and temperature of the air, and upon the amount and degree of muscular exercise, the lecturer said that did we realize how largely what we esteem our supremely intellectual life receives influential promptings from functional processes in obscure and despised organs of the body, we should not only be amazed, but be inclined to esteem physical training quite as important as the inculcation of ideas.

The lecturer then passed to speak of the physical basis for the controlling power of thought. Thoughts consume nervous force. Thoughts according to their intensity may have an inhibitory action on each other. If this be so it follows that the best conflict with one's evil propensities is indirect—that is, by immediate exercise of our faculties with thoughts and deeds conscience approves, rather than by attempts to increase the power of the will to rule, by drilling it in direct contests with vicious inclinations. If to expel evil we call in virtuous thoughts to occupy our mental energies, we intensify habits of mental action which will automatically assert their existence, and evil propensities will waste and weaken and perish from disuse.

This course of lectures has been listened to with deep interest, not for entertainment only, but principally to ascertain from a scientific stand-point the "mysterious connection between mind and matter" acknowledged and recognized by all, but capable of full comprehension by those only who are willing to patiently investigate the subject. Dr. Johnson is entitled to gratitude for the light he has thrown upon this important subject.

REGULAR MEETING, MONDAY, APRIL 17, 1876.

MEETING this evening. The PRESIDENT in the chair. Records read.

S. H. Gookin of Salem was elected a resident member.

CHARLES H. HIGBEE gave a familiar lecture on Seaweeds, illustrating his remarks with lantern pictures under the charge of Mr. E. Bicknell. He also exhibited many beautiful and well preserved specimens of pressed seaweeds.

Adjourned.

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REGULAR MEETING, MONDAY, MAY 1, 1876.

Meeting this evening. The PRESIDENT in the chair. Records read.

On motion of Mr. A. C. GOODELL:

Voted, That the thanks of the Essex Institute be tendered to Dr. A. H. Johnson for his instructive and profoundly interesting lectures "On the Relation of the Mind to the Nervous System."

On motion of Mr. T. F. HUNT:

Voted, That the thanks of the Essex Institute is hereby tendered to the Ladies' Centennial Committee of Salem for their very generous gift in aid of making an exhibit of the history of Salem at the International Exhibition at Philadelphia, the present season.

Voted, That a committee be appointed to prepare a list of officers for the year ensuing, and to report a printed ballot at the annual meeting, May 15.

Messrs. William Neilson, James Kimball, William D.

Northend, James A. Gillis, and the chair, were appointed on the above committee.

Rev. Richard M. Hodges, of Cambridge, was elected a corresponding member.

Vice President F. W. PUTNAM occupied the evening with an extended discourse

ON THE ANCIENT PERUVIANS.

He stated that he had been led to a special study of the arts and culture of this prehistoric race by the very important and large collection of articles from the ancient graves, tombs and ruins in Peru which had recently come under his charge at the Peabody Museum of Archæology and Ethnology in Cambridge. This most valuable addition to the Museum was collected by Mr. Alexander Agassiz and his assistant, Mr. S. W. Garman, and presented to the Museum by Mr. Agassiz. In the same Museum are many vases and other articles from Peru, presented by the late Professor Louis Agassiz, and obtained during the Hassler Expedition. The Peabody Museum thus contains the most important collection of Peruvian antiquities in this country, and furnishes the means of comparison, not only between the nations of Peru and those of other countries, but also between the ancient peoples of different parts of Peru. For this purpose the large collection of human remains in the Museum, consisting of several hundred skulls and a number of perfect bodies, or "mummies," collected by Mr. Squier and Professor and Mr. Agassiz, is of the greatest importance, and from the study of these remains from different localities, and a comparison of the works of art from the corresponding places, it is evident that there were two contemporaneous tribes or peoples who differed in many respects, and it is also very probable that these two tribes had come down to historic time, as the Quechua and Aymara tribes, though very much deteriorated and degraded since the Conquest. The Quechuas were probably formed by the union of various small tribes adopting a common language, which Forbes considers as probably founded on the older Aymara. From a study of the arts as shown by the specimens of weaving, etc., and especially of the pottery, it is hardly to be doubted that there was also a much higher development, at what is considered by Forbes as the ancient site of the Aymaras, about Lake Titicaca and especially at Tiahuanaco, all the pottery from this region being far superior in shape, design and execution, as well as generally of a different pattern, from that of the coast. Mr. Agassiz also arrived at the same conclusion from an inspection of the ancient ruins about the lake, and has stated that there is evidence of an intrusion of a later people at various places, as shown by two styles of architecture, one of which has been intruded upon the other. That these ancient people of the lake region were the ancestors of the Aymaras may be probable, but if so, even these Indians which have remained the purest and most isolated of all the Peruvian and Bolivian tribes, must have deteriorated, or have been disturbed in their development toward a higher civilization, even prior to the mythical Inca times. The lecturer here exhibited a large collection of photographs illustrating the several comparisons he had made, and showing the various kinds of architecture as exhibited by the ruins on the islands of Titicaca and Coati, and of several other places; also photographs of different localities in Peru, in order to show the various natural conditions now existing in the several regions whence the collections were obtained by Mr. Agassiz, to whose kindness he was indebted for the use of the photographs on this occasion. A number of other photographs, taken from specimens presented to the Peabody Museum by Mr. Agassiz, and illustrating the several forms of mummies and the method of burial, were also exhibited. The bodies taken from the tombs, or *chulpas*, in the high Andes, several of which have their heads artificially elongated, were either entirely devoid of covering or had only a braided cord wound about them. Those from the burial places (graves in the sand) near the Pacific coast, at Ancon and Pisaqua, were enclosed with cotton, leaves, and various articles, in large bundles or bales of cloth, which were carefully corded and then covered with rushes.

Several crania from the different localities were exhibited, and their characteristics pointed out. Articles of clothing were shown, and also pieces of cloth which had been woven, net and embroidered in many, and often elaborate patterns, some of the pieces being entirely of cotton, others of cotton and wool, and still others probably all of wool. Various other articles were exhibited in order to make more apparent the several facts mentioned by the lecturer. An oil painting, by Mrs. David, was on the stage and was used by Mr. Putnam in illustrating his remarks. This picture had been made by the artist from a group of the articles taken from the graves at Ancon, and beautifully and accurately represented several of the choicest specimens brought from Peru by Mr. Agassiz.

As the special account of Mr. Putnam's Peruvian studies will be published in another connection, only a very general and brief notice of his lecture has been given above. The lecture was listened to throughout with marked attention by a large audience, and the various articles upon the table were afterwards examined with much interest.

The meeting then adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., MAY, 1876. NO. 5.

One Dollar a Year in Advance. Ten Cents a Single Copy.

ANNUAL MEETING, MONDAY, MAY 15, 1876.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence:—

From S. F. Baird, Washington, May 8; E. F. W. Baker, Dorchester, Mar. 21; C. F. P. Bancroft, Andover, Mar. 6; A. Graham Bell, Boston, April 10; C. H. Bell, Exeter, N. H., Mar. 3, 14; Bresil, Commission Geologique de l'Empire, Feb. 16; Haydn Brown, West Newbury, May 8; Matthew Cooke, London, Feb. 11; A. W. Corliss, Camp Mc'Dowell, Arizona Terr., Feb. 16; F. M. Etting, Philadelphia, Penn., Mar. 4, 18, Apr. 10, 20; M. H. Fisk, Ipswich, May 6; A. C. Goodell, Jr., Mar. 5; Julia Ward Howe, Boston, Mar. 21; S. C. Jackson, State Library, Boston, May 9; O. A. Jenison, Lansing, Mich., Apr. 4, May 4; Kansas Academy of Science, Mar. 11; T. Cushing Ladd, Philadelphia, Apr. 5; J. Francis Le Baron, Boston, May 10; George B. Loring, Feb. 26; Madrid, Observatorio de, Feb. 21; E. S. Mills, Brooklyn, N. Y., Mar. 22; D. Moore, Salem Gas Light Co., May 4; Moscou, Société Imperiale des Naturalistes, Apr. 10; New York Academy of Science, Mar.; W. D. Northend, Apr. 15; Charles Palmer, Ipswich, Feb. 29; Paris, Société d'Anthropologie, Apr. 3; Francis Peabody, Boston, Apr. 6; F. B. Perkins, Boston Athenæum, May 10; J. D. Philbrick, Feb. 25, Mar. 21; Edward Porter, Lexington, Apr. 11; M. A. Porter, Treas. Ladies' Centen. Com., Salem, May 13; Abby S. Richardson, New York, Mar. 7; E. P. Robinson, Saugus, May 1, 9; John Robinson, Feb. 23; Leverett Saltonstall, Boston, Apr. 15, May 4; Sampson, Davenport & Co., Feb. 28, Apr. 1; Hon. Binney Sargent, May 11; Scribner, Armstrong & Co., New York, Mar. 1; Smithsonian Institution, Apr. 15; Richard S. Spofford, Washington, Apr. 11; Charles P. Thompson, M. C., Washington, Feb. 26; C. O. Thompson, Worcester, May 8; A. R. Turner, Jr., Boston, Apr. 4; U. S. Bureau of Education, Mar. 24, Apr. 6; Oliver Warner, State Library, Boston, May 5; William H. Yeomans, Columbia, Conn., Mar. 9.

The Librarian reported the following additions:—

By Donation.

Atwood, E. S. Miscellaneous volumes, 55.

Bell, Chas. H., of Exeter, N. H. Exeter in 1876. 8vo pamphlet.

Bolles, E. C. Miscellaneous pamphlets, 7.

Boston, City of. City Documents, 1875. 3 vols., 8vo.

Buffalo Young Men's Association. Report. Feb. 28, 1876. 8vo.

Burr, Fearing, of Hingham, Mass. The Town of Hingham in the Civil War, 1861–65. 1 vol., 8vo.

Conant, W. P., of West Newbury. The Triumphs of Temper. 12mo. 1804.

Cook, James P. Report of the Directors and Treasurer of the Maine Central Railroad Company, 1875. 8vo pamph.

Dane, Joseph F. Memoir of Francis Dane. 26 copies.

Drake, S. A., of Boston, Mass. Catalogue of the Library of S. G. Drake. Part I, II. 1876.

Flanders, G. P., of Lowell, Mass. Municipal Register of Lowell for 1875. 1 vol., 8vo. Miscellaneous pamphlets, 4.

Foote, Henry W. King's Chapel and the Evacuation of Boston. 8vo.

Garnett, A. S., of ——. Treatise on the Hot Springs of Arkansas. 8vo pamph.

Gillis, J. A. Addresses on the Death of J. B. Rice, A. Crocker, S. F. Hussey, Sam'l Hooper. Feb. 20, 1875. 1 vol., 8vo.

Goodell, Jr., A. C. Miscellaneous pamphlets, 125.

Gostorten, Alex., of St. Petersburg. Hebrew Book.

Green, S. A., of Boston, Mass. Fifth Registration Report of Michigan, 1871. 1 vol., 8vo. Miscellaneous pamphlets, 54.

Hartranft, John F., of Philadelphia, Penn. Pennsylvania Archives, 2nd Series, Vol. III. 1 vol., 8vo.

Harvard University, Bussey Institution. Bulletin, Pt. V, 1876. 8vo pamph.

Higbee, Chas. H. The Royal Blue Book, 1839. 1 vol., 12mo.

Hitchings, E. H., of Boston, Mass. Elements of Chemistry. 1 vol., 8vo. Wayland's Moral Science. 1 vol., 12mo. Boston Directory, 1862–3. 1 vol., 12mo. Notices of Rare Tracts. 1 vol., 12mo.

Holden, N. J. The Commonwealth for, 1875.

Hough, F. B., of Lowville, N. Y. Historical Sketch of the Mt. Holyoke Seminary, 1876. 8vo pamph.

Hunt, T. F. Anniversary of the First Religious Society of Newburyport, 1725–1875. 8vo pamph.

Kimball, James. Miscellaneous pamphlets, 9.

Kingsley, J. S. Catalogue of Dean Academy, 1875. 8vo pamph.

Ladies' Centennial Committee of Exeter, N. H. Exeter in 1876. 8vo pamph.

Lee, John C. Commercial Bulletin.

Lowell, Old Resident's Historical Association. Contributions of, No. II. Feb., 1876. 8vo pamph.

McGeary, James. The Medium and Daybreak, Vol. 6, 1875. 1 vol., royal 8vo 1875–1876. 23 numbers.

Morse, E. S. The Orient. 15 numbers.

Paine, Nath'l, of Worcester, Mass. Portraits and Busts in Public Building at Worcester, Mass. 8vo pamph.

Prescott, Jeremiah. Report of the Manager of the Troy & Greenfield Railroad and Hoosac Tunnel. Dec. 31, 1875. 8vo pamph.

Poole, W. F., of Chicago, Ill. The Ordinance of 1787 and Dr. Manasseh Cutler. 8vo.

Putnam, F. W. New York Tribune, Feb., Mar., Apr., 1876.

Salem, City of. City Documents, 1875. 1 vol., 8vo.

Stevens, Anna C. The Climate and Disease of America during the Revolution.

Thompson, Chas. P., M. C. Addresses on the Death of J. B. Rice, etc., Feb. 20, 1875. 1 vol. Addresses on the Death of Wm. A. Buckingham, Feb. 27, Mar. 1, 1875. 1 vol. Mineral Resources West of Rocky Mountains. 1 vol. Revised Statutes relating to District of Columbia. 1 vol.

Towne, W. B., of Milford, N. H. Historical Address at Amherst, 1874. 8vo.

Tucker, Jonathan. Miscellaneous papers, 40.

U. S. Department of Interior. Department of the Interior. Circulars of Information of the Bureau of Education. Nos. 1-8. 1875.

U. S. Patent Office. Official Gazette. Mar. 28, Apr. 4, 11, 18, 1876.

Waters, J. Linton. Service and Hymn Books. Miscellaneous pamphlets, 12.

Whipple, Geo. M. Biographical and Genealogical Sketches of Wm. Blackstone. 8vo pamph. To-Day. 1 vol., 8vo.

Wilder, Marshall P., Boston. American Pomological Session, 1875. 4to.

Worthen, A. H., of Springfield, Ill. Geological Survey of Illinois, Vol. VI.

By Exchange.

American Antiquarian Society, Worcester. Proceedings of. Oct. 21, 1875.

Berlin, Vereines zur Beforderung des Gartenbaues. Monatsschrift-Jahrg. xviii, 1875.

Boston Society of Natural History. Proceedings of. Vol. xviii, pt. ii. June–Jan., 1875–76, and Sigs. 13, 14, Feb., 1876. Memoirs, Vol. ii, pt. iv, Apr., 1876.

Bowdoin College. Catalogue of, 1875–76.

Canadian Institute. Journal. Apr., 1876.

Cherbough, Société Nationale des Sciences Naturelles de. Memoires, Tome xviii. 1874. 1 vol., 8vo.

Dresden, Naturwissenschaftlichen Gesellschaft "Isis" in. Sitzungs Berichte. Jahrg., 1875.

Dublin, Royal Irish Academy. Transactions of. Vol. xxiv, pts. ix, xvi, xvii, 1870. Vol. xxv. 1872-75. Proceedings of. Vol. I, Ser. II. 1871-73. Nos. 5-10. Vol. II. Series II. 1875. Nos. 1-3.

Frankfurt a. M. Senckenbergische Naturforschende Gesellschaft. Bericht. 1873-74. 8vo pamph. Abhandlungen, Band ix, Heft. iii, iv. 1874-75.

The annual reports of the Secretary, Treasurer, Curators and Standing Committees were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR

has been compiled, presenting the work of the Institute, in its various departments, since the last annual meeting.

Members.—Changes occur in the list of our associates by the addition of new names and the withdrawal of some by resignation, removal from the county or vicinity, and by death. Fifty-six resident members have been elected: The present number is five hundred and fifteen. Fourteen members have died, all having passed the meridian of life, and eight the alloted period of three score years and ten. Some of them had been connected with the Institute from its organization.

Samuel Gardner Drake, born at Pittsfield, N. H., Oct. 11, 1798; died in Boston, June 14, 1875. Son of Simeon and Love Muchamore (Tucke) Drake. At the age of eighteen he went as a clerk to his uncle's store in Boston. Taught school several years in Loudon, N. H., and in New Jersey. In 1828 began business as a bookseller, and except about a year and a half spent in Europe, was identified with that business in Boston until his decease. In July, 1830, he established the first antiquarian bookstore in Cornhill, Boston. This store soon became the resort of the literary men of that day, Bancroft, Hildreth, Prescott, Sparks, Everett, and others well known, and became a kind of literary exchange. In 1845 five gentlemen, one of whom was Mr. Drake, originated the New England Historic-Genealogical Society, whose building is now on Somerset street, Boston. He originated the New England Historical and Genealogical Register, the first number of which was issued in January, 1847. For the first fourteen years, 1847 to 1861, he was the publisher, and a large part of the time, editor of the Register. His best known works are "Book of the Indians," "History and Antiquities of Boston," "Founders of New England," etc. He possessed a large library of 15,000 volumes and 30,000 pamphlets directly or collaterally relevant to American History. He had been President of N. E. Hist. Gen. Society and of the Prince Society, and was also connected with many other historical societies. He was elected a member Feb. 14, 1849.

Charles Wentworth Upham, son of Judge Joshua Upham, a royalist in the Revolution, born at St. John, N. B., May 4, 1802, graduated at Harvard College in 1821, ordained at Salem Dec. 8, 1824. Colleague with Rev. Dr. John Prince of the First Church. Relinquished the ministry Dec. 8, 1844. At different times editor of Christian Review and Christian Register. Mayor of Salem in 1852. A member in Massachusetts House of Representatives, of which he was speaker, also of the Massachusetts Senate, and its president in 1857 and 1858. Representative in U. S. Congress in 1853–56, and of the Massachusetts Convention in 1853. In 1828 he published "Letters on the Logos," "Lectures on Witchcraft" in 1831, "Life of Sir H. Vane" in 1835, "Life of J. C. Fremont" in 1856, "Salem Witchcraft," in 1867. He was a frequent contributor to leading reviews and magazines and author of several orations, pamphlets, etc. He was always interested in the various institutions of Salem promotive of education and culture. He contributed several papers to the Historical Collections of the Institute, among which may be mentioned Memoirs of George A. Ward, Francis Peabody and Daniel P. King. His last great work was the completion of the "Life of Col. T. Pickering" (which was commenced by Octavius Pickering, who prepared and caused to be printed the first volume), in 4 vols., 8vo, a valuable contribution to history and a just tribute to the memory of a patriot of the Revolution, who was a friend and counsellor of Washington, both on the field and in the cabinet. Mr. Upham died in Salem on Tuesday morning, June 15, 1875. His wife, Ann Susan, daughter of the late Rev. Dr. Abiel Holmes of Cambridge, and two sons, William Phineas and Oliver Wendell Holmes, survive. He was elected a member of Essex Historical Society March 1, 1825.

Winslow Lewis, of Boston, widely known in many different walks of life, died on Tuesday night, August 3, 1875, at the house of his son, Dr. George H. Gay in Grantville. He was son of Winslow and Elizabeth (Greenough) Lewis and was born in Boston, July 8, 1799. Graduated at Harvard in 1819, studied medicine with Dr. John C. Warren and took his degree in 1822, afterwards pursued his studies with the celebrated Abernethy of London and Dupuytren of Paris. On his return he commenced practice in Boston, and soon rose to distinction. He was consulting surgeon in the Massachusetts General Hospital, and during a successful, extensive and varied practice of thirty-five years educated hundreds of young men, many of whom are now eminent in their profession. He was a scholar, and had an interest in books and the best literature. He translated from the French "Gall on the Brain," in 6 vols., edited an edition of Paxton's Anatomy, and gave many addresses before literary and scientific societies. He had been President of New England Historic-Genealogical Society and of the Boston Numismatic Society. Aside from the profession, his great interest was in Free Masonry. He filled every post of service and honor that the order could bestow. He married, Feb. 22, 1828, Emeline Richards, daughter of Capt. Benjamin Richards, of New London, Conn. He was elected a member Feb. 6, 1865.

John K. Wiggin, well known as a collector of antiquarian and historical books, and as a publisher, was born in Wakefield, N. H., August 5, 1825, and died in Boston, August 20, 1875. He was elected a member Oct. 26, 1859.

Increase Allen Lapham died suddenly at Milwaukee, Wisconsin, Sept. 14, 1875. He was born at Palmyra, N. Y., March 7, 1811. At one time a civil engineer employed on the Welland Canal and also on the canal around the Falls of the Ohio at Louisville, Ky.; from 1833–1835 Secretary of the Board of Canal Commissioners of Ohio. In 1838 he removed to Milwaukee, where he resided until his decease. In 1862 he was chosen President of the Wisconsin Historical Society. In 1873 he was appointed State Geologist and began making a thorough geological and topographical survey of the State. He was a prolific writer, having been a frequent contributor to scientific journals and other publications. He was elected a member of Essex County Natural History Society, July 13, 1836.

William Prescott, son of William and Deborah (Welch) Prescott, born at Sandbornton, N. H., Dec. 29, 1789. In early life, a farmer. In 1815 received the Medical degree from Dartmouth Medical School, and commenced the practice of the profession at Gilmanton, N. H., where he remained eighteen years. In December, 1832, he removed to Lynn, Mass., and in September, 1845, to Concord, N. H. In 1852 he relinquished active professional labor for the purpose of devoting himself to those literary, scientific, genealogical and antiquarian studies for which he had a decided taste. He died at his home in Concord, Oct. 18, 1875. During his residence in Lynn, he was present and took an active part at the first meeting of the Essex County Natural History Society, Dec. 14, 1833, and was one of the persons named in the Act of Incorporation. For ten years he was one of the curators of the Society, and at the time of his removal from the State one of its Vice Presidents. He delivered a lecture before the Natural History Society in 1838, which was printed in the Journal, on the Minerals of the Southern Part of Essex County. His great work, to which he gave many years of labor, is "A Memoir of the Prescott Family," in 1 vol., 8vo.

William Ives, eldest son of Capt. William and Mary (Bradshaw) Ives, was born in Salem, Feb. 15, 1794. He served an apprenticeship in the office of the "Salem Gazette" with the late Thomas C. Cushing. In January, 1823, he commenced the "Salem Observer," which assumed a permanent condition under his management. He was also for many years well known as the senior partner of the old firm of W. & S. B. Ives. He retired several years since and has passed the interval in the enjoyment of social life and in reading. He died at his residence in Salem, Dec. 12, 1875. An original member of Essex County Natural History Society, 1833.

John Merrill Bradbury died at his residence in Ipswich on Tuesday, March 21, 1876. He was the son of the late Ebenezer Bradbury of Newburyport, formerly State Treasurer, and was born in that city Oct. 29, 1818. He was three years a student in Dickenson College, but did not graduate; teacher for several years in Newburyport, then chief clerk in the Treasury Department of the State, and afterwards connected with a banking firm in Boston; retired from business in 1866 with a competency. In 1868 went to Europe and remained there several years. Mr. Bradbury had a fondness for antiquarian research, and devoted his leisure and time to the history and genealogy of many old families of Essex County. He was elected a member Dec. 16, 1873.

Josiah Stickney. This well known and for many years active merchant in the metropolis, died at his residence, on the banks of Charles River, Watertown, Monday, March 27, 1876. He was the son of William and Abigail (Walker) Stickney, and was born at Grafton, Vt., Jan.

6, 1789. He removed to Boston at an early age, and commenced business near the old "Bite Tavern," and was very successful. He was afterwards interested in sugar refinery, railroads, and other business operations, and for many years Director of the Western, Concord, and Connecticut & Passumpsic River Railroads; also Director and President of Market Bank. Mr. Stickney was also prominent as an horticulturist, and long an efficient and interested officer of the Massachusetts Horticultural Society. A contributor to the exhibitions, his grounds in Watertown being always kept in a high state of cultivation, and furnishing the choicest specimens of fruits and flowers. He was elected a member Sept. 4, 1865.

Ebenezer Putnam, son of Ebenezer and Sarah (Fiske) Putnam, was born in Salem, Sept. 6, 1797, graduated at Harvard in the class of 1815, died at Salem, Apr. 3, 1876. In early life he was a teacher in the family of Nathan Read in Maine and also in a family in Virginia. He afterwards spent some years in mercantile life at the west. Postmaster of Salem from 1829 to 1840. He was interested in political history and in the study of the laws which govern states and nations. He also devoted much attention to horticulture and in some departments was a large and successful grower. Associated with his brothers he largely contributed to the Horticultural Exhibitions under the auspices of the Institute. He was elected a member of the Essex Historical Society May 12, 1837.

William E. Doggett, of Chicago, died at Palatka, Florida, April 3, 1876, where he had gone on account of failing health. He was born at Freetown, Mass., Nov. 20, 1820. He went to Chicago in 1846, and established the boot and shoe house of Ward, Doggett & Co. This connection was maintained until the decease of Mr. Ward in 1856. The present firm of Doggett, Bassett & Hills has continued from that to the present time. In addition to this connection he was largely identified with the trade, commerce, benevolent institutions and progress of Chicago. As Vice President of the Merchant's Savings, Loan & Trust Company, and an officer of the Academy of Science, Chicago Historical Society, Young Men's Library Association, Athenæum, etc., he contributed very materially to the success of these Institutions. In 1858 he married Miss Kate Newell, a lady well known as a writer and lecturer, who survives him. Some ten or twelve years since, during his summer residence for several seasons at Swampscott, he associated himself with the Institute, attended the field meetings and took a lively interest in the promotion of its objects. He was elected a member July 17, 1865.

MEETINGS.—During the summer three *Field Meetings* have been held. The first at the Chebacco House, in Hamilton, June 3, 1875. The woods and ponds in the vicinity are very enjoyable for excursions and meetings of this character. Communications were made by F. W. Putnam, on Shell Heaps and Indian Relics at West Newbury; A. Osgood, Notice of the Mining Lands at Newbury; J. H. Stevens, on the Cane Brakes in Louisiana; L. H. Upton, List of Plants found in Flower. *Second*, at Byfield, July 1, 1875, the seat of Dummer Academy and abounding in interesting historical associations. W. D. Northend spoke of Byfield and the Academy; and J. Spofford, F. W. Putnam, John Robinson, Haydn Brown, Amos Noyes, and S. J. Spaulding offered remarks. *Third*, July 27, 1875, at Concord, Mass. The interest in this historic old town inspired by the events of the 19th of April, 1775, was freshly awakened by the commemoration of the present year. Remarks by E. R.

Hoar, E. S. Morse, F. W. Putnam, E. C. Bolles, G. Reynolds, and others.

Regular Meetings. Twenty-one have been held at the rooms, usually on the first and third Monday evenings of each month. The papers read and lectures delivered have proved exceedingly instructive. The following may be specified:—W. P. Upham, on the Settlement of Rev. S. Skelton, and on the Siege of Boston; James Kimball, on Indian Utensils; A. Graham Bell, on Visible Speech; G. F. Wright, on Indian Ridge and its Continuation in Andover; S. C. Oliver, on the Instinct and Intelligence of Animals; George M. White, on Pottery; John Robinson, Addenda to the Ferns of Essex County; E. S. Atwood, on the Manufacture of Silver Plated Ware; S. G. W. Benjamin, on the Theory and Practice of Art; N. H. Chamberlain, on the Way of making Orators; C. H. Higbee, on Algæ; F. W. Putnam, on the Ancient Race of Peru.

LECTURES AND CONCERTS.—A course of four very able and instructive lectures on the Relation of the Mind to the Nervous System were given by Dr. Amos H. Johnson of this city. The lectures were attended by a large and appreciative audience. The receipts of the entire course were generously given to the Institute by the lecturer.

Under the direction of the Curator of music, four concerts were given, which proved highly successful. 1st. On Monday evening, Nov. 22, by Mr. B. J. Lang and Miss Ita Welsh; 2nd. On Monday evening, Dec. 13, by Mrs. J. W. Weston, Messrs. G. W. Sumner and George Bridgham; 3d. On Wednesday evening, Dec. 29, by Messrs. August and Wulf Fries and Arthur W. Foote; 4th. Monday evening, January 10, by Mrs. Edward

Kemble, Mrs. George Upton, Dr. S. W. Langmaid and Mr. Arthur W. Foote.

Art Exhibition.—Opened at the rooms of the Institute on Tuesday, Nov. 9, and closed Wednesday the 17th, under the skilful and tasteful direction of the Curator of painting and sculpture. It was the generally expressed opinion that this was one of the most pleasing and interesting exhibitions ever given by the Institute. It was largely attended and the display of pictures was exceedingly creditable to the taste of our citizens, who cheerfully loaned their works of art, many of which were extremely valuable. The main hall was devoted to the display of oil paintings, water colors, pen and ink, and pencil sketches. The eastern anteroom was occupied by the display of bronzes, porcelain and pottery. This was the first ceramic exhibition in Salem.

Library.—The additions by donations and exchange during the year were as follows :—

Donations.

Folios,	2	Pamphlets and Serials,	3,065
Quartos,	17	Total of bound volumes,	545
Octavos,	412		
Duodecimos,	97	Total of Donations,	3,610
Sexdecimos,	17		
Total,	545		

Exchanges.

Quartos,	6	Pamphlets and Serials,	1,191
Octavos,	315	Total of bound volumes,	364
Duodecimos,	43		
		Total of Exchanges,	1,555
Total,	364	Total of Donations,	3,610
			5,165
By Purchase,			43
Quartos,	41		
Duodecimos,	2	Total of Additions,	5,208
	43		

Of the total number of pamphlets and serials, 1,824 were pamphlets, and 2,432 were serials.

The donations to the Library for the year have been received from one hundred individuals and twelve societies and departments of the General and State Governments. The exchanges from ninety-three societies and incorporate institutions, of which sixty-one are foreign; also from editors and publishers.

The library has been carefully examined and all the books have been put in good order. The number of exchanges has increased during the year. Large additions have been made to the valuable and full collection of directories and also to the public documents.

The Assistant Librarian has commenced the preparation of a catalogue of the books in the upper hall, alphabetically by authors. This in its first rough form is now completed, except only the letter W. This will furnish a basis for a finished catalogue hereafter. The Secretary has arranged, catalogued, and placed in convenient folios for easy reference, the large number of maps, plans, engravings and prints of a miscellaneous character. The musical library has been rearranged, and the large collection of programmes, play bills, and musical catalogues have been placed in folios.

The collection of manuscripts has been placed in glass cases in the eastern portion of the gallery of the western anteroom, and are partially put in order. It is intended to have an index which shall render access to them more convenient.

MUSEUM.—Many valuable specimens in natural history have been given during the year, and are on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. These have been reported at our meetings, and have been duly acknowledged to the several donors. In addition to these several interesting specimens of an historical character have been arranged in the rooms of the Institute, and contribute very much of interest and value to the antiquarian and historical portion of the museum. To the Technological department several series of specimens have been added.

PUBLICATIONS.—The BULLETIN has been continued, and gives full reports of the doings of the Institute, and abstracts of papers read at the meetings. The HISTORICAL COLLECTIONS, Vol. xiii, No. 2, has been printed.

BY-LAWS.—The revised By-laws, adopted in March, will soon be printed for circulation among the members.

EXCURSIONS.—Two excursions arranged by members and friends of the Institute, one by boat to the Isle of Shoals, the other by rail to the White Mountains, were largely attended. They were planned to promote the social objects of the Institute and were quite satisfactory in the results.

CENTENNIAL EXHIBITION.—The Directors of the Institute, in compliance with several official circulars and personal letters from the Chief of the Historical Department of the Centennial Exhibition at Philadelphia, voted to make an exhibit of specimens illustrative of the history of Salem. Six portraits of persons noted in the early history, and about one hundred articles of historical interest, also an album containing one hundred and twenty photographs illustrating our city, have been carefully packed for sending to Philadelphia under the personal care of an officer of the Institute.

FINANCIAL.—The Treasurer's Report shows the following receipts and expenditures during the year.

DEBITS.

General Account.

Athenæum, Rent, etc., $350.00; Salaries, $782.00; Coal, $160.00,	$1,292.00
Express and Postage, $64.67; Insurance, $40.00,	104.67
Binding, $20.00; Gas, $161.53; Publications, $950.93,	1,132.46
Sundries, $86.77; Expenses of Excursions, $2,077.86	2,164.63
Department of Art, 1874, 1875, $238.24; Stationery, 19.23,	257.47
Balance of last year's account,	89.58
Balance in hands of Treasurer,	65.85

Historical.

Books,	158.00

Natural History and Horticulture.

Books, $3.93; Sundries, $12.50,	16.43

Ditmore Fund.

Chicago City Bond with accrued interest,	1,058.22
	$6,339.31

CREDITS.

General Account.

Dividends Webster Bank,	15.00
Assessments, $1,241.00; Publications, $90.21,	1,331.21
Sundries, $201.43; Excursions, $2,316.10,	2,517.53
Salem Athenæum, one-half coal and janitor,	173.23
Lectures, $165.05; Art Department, $5.80,	170.85
Due to late Treasurer and included in a note passed to him Dec. 11, 1875,	615.49

Historical.

Dividends Naumkeag Bank,	18.00

Natural History and Horticulture.

Dividends P. S. & P. R. R.,	16.00
Dividends Lowell Bleachery,	32.00

Davis Fund.

Coupons Burlington and Missouri R. R.,	240.00
Coupons Dixon, Peoria and Hannibal R. R.,	140.00

Ditmore Fund.

Received from Executor,	1,000.00
Coupons Chicago City Bond,	70.00
	$6,339.31

The following Officers were then elected, until others shall be chosen in their stead:—

PRESIDENT:

HENRY WHEATLAND.

Vice-Presidents:

Abner C. Goodell, Jr.
William Sutton.
Frederick W. Putnam.
Daniel B. Hagar.

Secretary:
George M. Whipple.

Treasurer:
David Pingree.

Auditor:
Richard C. Manning.

Librarian:
William P. Upham.

CURATORS:

History—James Kimball.
Manuscripts—W. P. Upham.
Archæology—F. W. Putnam.
Numismatics—M. A. Stickney.
Geology—Alpheus S. Packard, Jr.
Botany—John Robinson.
Zoology—Edward S. Morse.
Horticulture—Caleb Cooke.
Painting & Sculpture—T. F. Hunt.
Technology—Edwin C. Bolles.

COMMITTEES:

Finance:

John C. Lee. James Upton. James O. Safford. H. M. Brooks.

Library:

Chas. W. Palfray. Joseph G. Waters. Henry F. King.
George F. Flint. Wm. Neilson.

Publications:

Abner C. Goodell, Jr. Edward S. Atwood.
Edwin C. Bolles. James Kimball.

Lectures:

William D. Northend. A. H. Johnson. F. W. Putnam. A. L. Huntington.

Field Meetings:

Allen W. Dodge, Hamilton.
Geo. Cogswell, Bradford.
George D. Phippen, Salem.
George Perkins, Salem.
E. N. Walton, Salem.
Francis H. Appleton, Peabody.
Lewis N. Tappan, Manchester.
Francis H. Johnson, Andover.
R. S. Spofford, Newburyport.
N. A. Horton, Salem.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., JUNE, JULY, 1876. No. 6.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, JUNE 5, 1876.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Mr. T. F. HUNT was elected Secretary, *pro tem.* Records of the preceding meeting were read.

Mr. Putnam exhibited and made remarks on a number of ancient gold images recently secured by the Peabody Museum of Archæology in Cambridge. The articles were principally from graves near Bogota, New Grenada, and were particularly interesting in connection with the mythology of the ancient race by whom they were made.

J. F. Lougee of Salem was elected a resident member.

◆

REGULAR MEETING, MONDAY, JUNE 19, 1876.

MEETING this evening. The PRESIDENT in the chair. Mr. F. W. PUTNAM was requested to act in the absence of the Secretary. Records of the preceding meeting were read.

The presentation of an interesting collection, from Alfred Peabody of Salem, suggested remarks from several members and occupied the hour of the meeting. This collection consisted of specimens, in fine condition, of skins of seven species of birds from Madagascar. Also the horns of a gemsboc from Madagascar, and several botanical specimens from the Cape of Good Hope.

◆

REGULAR MEETING, MONDAY, JULY 3, 1876.

MEETING this evening. The PRESIDENT in the chair. Records of the preceding meeting were read.

Messrs. Charles Henry Hart, Frank M. Etting and Samuel Chew, of Philadelphia, were elected corresponding members.

Helen J. Almy of Salem was elected a resident member.

◆

FIELD MEETING AT BEACHMONT, SATURDAY, JULY 22, 1876.

THE first field meeting of the season was held this day at Beachmont on the line of the Boston, Revere Beach & Lynn Railroad. The party left Salem at 9.20 A. M., and Lynn at 10.00, and proceeded to the Ocean House on the eastern end of the Revere Beach, where two hours were pleasantly spent in rambling over the fine beach and enjoying the refreshing sea breeze. At noon the cars were taken for Beachmont, the place of rendezvous, near the western end of the beach. This remarkable elevation rises directly above the southern shore of Lynn Bay. On its eastern extremity the rollers break as they come in from the open sea. The view from the summit is varied and beautiful. Boston, Charlestown, Chelsea, Malden, Saugus, Lynn, Swampscott and Nahant in all their diversified beauties, while the blue expanse of the ocean with its numerous sail and the occasional passing steamer, form a grand panorama that is seldom equalled. Nestling near the southern base is the little town of Winthrop, with its rural and pastoral appearance in striking contrast to its surroundings, which are essentially marine. This locality is well adapted for seaside residences, and it is to this hill that Dr. Petermann alluded in his recent address before the American Geographical Society, as furnishing the most delightful view he had seen in America. At the summit a building has been erected, which was the headquarters for the day, where the lunch was partaken and the afternoon session was held.

At 2.30, P. M., the meeting was called to order by the PRESIDENT. Mr. F. W. PUTNAM was requested to act as Secretary in the absence of that officer. Records read.

The SECRETARY announced the following correspondence:—

From E. P. Ainsworth, June 3; H. J. Almy, July 12; F. H. Appleton, Lynnfield, May 25, July 10; E. P. Boon, New York, May 30, June 13; Henry Breed, Lynn, July 14; S. Chew, Germantown, Penn., July 11; D. P. Corey, Boston, June 27; Frank M. Etting, Philadelphia, May 15, 24; D. B. Hagar, May 25; Charles Henry Hart, Philadelphia, July 10; Samuel Henshaw, Boston, June 20; A. L. Huntington, June 5; O. A. Jenison, Lansing, Mich., June 30; F. H. Johnson, Andover, May 30; S. Kimball, Marblehead, July 19; I. P. Langworthy, Boston, June 20; Jacob Leamon, Condit, Ohio, May 15; G. B. Loring, July 14; Samuel W. McDaniel, Cambridge, May 15; George H. McLean, Washington, Del., July 19; A. S. Packard, Jr., July 20; E. H. Payson, June 9; David Pingree, May 22; C. P. Preston, Danvers, June 26; P. D. Richards, Philadelphia, May 29, July 20; Hor. Binney Sargent, June 1; C. O. Thompson, Worcester, May 17; G. M. Whipple, Philadelphia, May 19; G. F. Wright, Andover, June 20; American Social Science Association, Boston, May 31; Augsburg, Naturhistorischen Verein in, Feb. 1; Bamberg, Naturforschende Gesellschaft; Basel, Naturforschende Gesellschaft, Feb. 22; Berlin, Die Gesellschaft Naturforschender Verein, May 22; Boston Society of Natural History, July 14; Brunn, Naturforschende Verein, Feb. 14; Buffalo Historical Society, May 22, June 20, July 1; Calcutta, Geological Survey of India, Dec. 1; Chemnitz, Naturwissenschaftliche Gesellschaft, Apr. 1; Danzig, Naturforschende Gesellschaft, Apr.

15; Edinburgh, Royal Society, Feb. 21; Erlangen, Physikalisch-medicinische Societat, Apr. 8; Freiburg, Naturforschende Gesellschaft, Mar. 17; Genevé, Société de Physique et de Histoire Naturelle, Jan. 25; Lowell Bleachery, July 7; Marburg, Gesellschaft zur Beforderung der Gesammten Naturwissenschaften, April; New England News Co., July 28; New Jersey Historical Society, June 19, 30; New York, Academy of Sciences, June 19; New York Historical Society, June 19, 30; Ohio Historical and Philosophical Society, May 22, June 19, July 1; Pennsylvania Historical Society, June 17; Philadelphia Academy of Natural Sciences, June 28; Rhode Island Historical Society, July 19; Salem Hospital, June 29; U. S. Office of Med. Statistics, May 25; Vermont Historical Society, May 22, July 12; Waterbury, Bronson Library, June 1; Wien, K. Akademie der Wissenschaften, Dec. 27; Wien, K. K. Zoologische-botanische Gesellschaft, March; Worcester Lyceum and Natural History Association, May 24; Yale College, July 15.

The LIBRARIAN reported the following additions:—

By Donation.

APPALACHIAN MOUNTAIN CLUB. Appalachia. June, 1876. 8vo.

BOLLES, E. C. Homage to the Book. 1 vol., 12mo. The Pilgrim Series Question Book. 3 vols., 12mo. National Series of Sunday School Lessons. 2 vols., 12mo. Miscellaneous pamphlets, 22.

CARPENTERS' COMPANY, PHILADELPHIA. By-Laws, Regulations and Rules, etc. 1 vol., 8vo. Phila., 1873.

FOSTER, W. H. Miscellaneous pamphlets, 18.

GOODELL, JR., A. C. Miscellaneous pamphlets, 139.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 25.

HUMPHREYS, A. A., of Washington, D. C. U. S. Geological Surveys. Vol. 3, 1876. 1 vol., 4to.

HUNT, T. F. History of Independence Hall, by F. M. Etting. 1 vol., 8vo. 1876. Celebration of the Centennial Anniversary of the Evacuation of Boston by the British Army, March 17, 1776, by Geo. E. Ellis. 1 vol., 8vo.

JOHNSON, THOMAS H. Salem Post for 1873, 1874, 1875.

KIMBALL, JAMES. Cape Ann Advertiser, Mar., Apr., May, 1876.

KINGSLEY, J. S. Hand-Book of the Kansas State Agricultural College. 8vo pamph. 1874.

MACK, ESTHER C. Dwight's Journal of Music, 1862–1872. 6 vols., 4to.

MACK, WM. Miscellaneous volumes, 31. Miscellaneous pamphlets, 60.

NEWHALL, THOMAS A., Germantown, Penn. List of Emigrants to America, 1600–1700. 1 vol., small 4to. Memoirs of the Historical Society of Penn., Vol. viii. 1 vol., 8vo. History of Essex Co., by Phillip Morant. 2 vols., folio. London, 1768. Reprint, 1816.

NOURSE, DORCAS C. Oliver Optics for 1870, 1871, 1872, 1873, 1874.

OSGOOD, CHAS. S. Eastern Railroad Investigation, 1876. 1 vol., 8vo. Boston and Albany Railroad Investigation, 1876. 1 vol., 8vo. Briggs' Investigation, 1876. 1 vol., 8vo.

PALFRAY, C. W. Miscellaneous pamphlets, 8.

PEABODY, ALFRED. History of the Pacific Guano Company. 8vo pamph.

PERKINS, ALBERT C., of Exeter, N. H. Catalogue of Officers and Students of Phillips Exeter Academy, 1875–76. 12mo.

PUTNAM, F. W. New York Tribune, Apr., May, 1876.

STORY, AUGUSTUS. Kastner's Archiv für die gesammte Naturlehre. 19 vols., 8vo. Archiv für Chemie und Meteorologie. 9 vols., 8vo. 18 other volumes. Also Miscellaneous pamphlets, 95.

TUCKER, JONATHAN. Miscellaneous pamphlets, 6.

U. S. Patent Office. Official Gazette, Mar. 28, Apr. 4, 11, 18, May 9, 30, June 6, 27.

Watson, Caroline A. Holy Bible. 1 vol. London, 1599.

By Exchange.

American Academy of Arts and Sciences, Boston. Proceedings. 1875-76. 8vo.

American Philosophical Society. Proceedings. Vol. xvi. Jan.-June, 1876

Baltimore, Md., Peabody Institute. Report of the Provost to the Trustees, June 4, 1868, June 1, 1876. 2 pamphlets, 8vo.

Berlin, Gesellschaft Naturforschender Freunde zu. Sitzungs Berichte Jahrg. 1875.

Boston Society of Natural History. Proceedings. Apr., May, 1876.

Calcutta, Geological Survey of India. Memoirs, Ser. ix, pt. 2, 3, 1875. Records, Vol. viii, pt. 1, 2, 3, 4, 1875.

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The President remarked that the first field day usually occurs in the early part of June. In this, the centennial year, so replete with many interesting and all absorbing exhibitions and commemorations, the accustomed routine has been interrupted.

He alluded to several rare species of mollusks and other marine animals that are occasionally found on the Revere Beach during the lull, or after the close, of an easterly storm.

The President called on Prof. E. S. Morse, who gave an interesting and very instructive general statement in regard to the formation of hills, and of the existing glaciers on the coast of Alaska. He showed how ridges, like the hill on which the party were holding the meeting, were made by the masses of ice, or glacier. Another set of hills are produced by volcanic action; still another way of hill making is by the bending of rocks due to the continued concentration and rending of the crust of the earth. This, Prof. Morse said, might be illustrated by chains of mountains, the largest mountains being found on the borders of the largest areas of subsidence. He illustrated these formations with a piece of fruit cake, showing how the cake will bend and finally split, exposing the corresponding strata on each side in the form of mountain chains with a valley between. Prof. Morse mentioned Prof. Niles' experiments on the expansion of rocks, showing that lateral pressure in rocks exists.

Mr. GEO. DIXON of England spoke of the Winston dyke, and its formation, and gave a description of the dyke crossing the German Ocean. Prof. MORSE remarked on the fluid nature of trap, and the erosion caused by ice, as in the Connecticut valley, where the matrix of sandstone has been eroded, leaving the trap standing and protecting the sandstone below.

Mr. F. W. PUTNAM said he had looked for a shell heap said to be on the point, but did not succeed in finding it. He therefore gave a short account of the present Indians of the plains and the existing Indian War, and endorsed the views lately expressed by Mr. L. H. Morgan in regard to the proper policy to be pursued in relation to the Indians.

He then introduced Dr. G. A. OTIS, U. S. A., and Curator of the Army Medical Museum at Washington.

Dr. OTIS gave a brief account of the life of the Indian chief, Sitting Bull, from a pictograph made by that chief and now in the Army Medical Museum. Dr. Otis also spoke of the advantages enjoyed by members of the Institute, and said he doubted if they were aware of the high reputation which the society had gained in the estimation of educated and scientific men away from its immediate location.

Mr. D. M. **Balch** gave an account of the few minerals he had been able to find during the morning's ramble. They consisted principally of the several varieties of porphery; the specimens were exhibited and elicited some remarks.

Mr. **Dixon** spoke of the plants he had found in the vicinity, and remarked on a plant which he stated should be emblematic of America, the *Epigea repens*, as he thought there should be a flower as well as a bird. Mr. Dixon also discussed the question of what the shamrock was.

Mr. S. C. **Bancroft** asked for further information in regard to the shamrock, whether or not it was the same as the clover. Prof. **Morse**, in answer to the question, believed that the word shamrock was known before clover was introduced, but that afterwards clover took the name of shamrock.

Mr. **Bancroft** asked if our common plants, weeds for instance, were as common in foreign lands as here. Mr. **Dixon** answered that many flowers, weeds, etc., come with civilization, as for instance the wood-wax. He further alluded to the trouble we should probably experience from the introduced sparrow.

Mr. **Putnam** mentioned that the ornithologists gave timely warning against the introduction of the sparrow, and in regard to an emblematic plant he thought that while the Epigea as a flower would be appropriate, its present want of a popular name would be against its general adoption.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., AUGUST, 1876. NO. 7.

One Dollar a Year in Advance. Ten Cents a Single Copy.

FIELD MEETING AT MANCHESTER, THURSDAY, AUGUST 10, 1876.

MEMBERS of the Institute and their friends residing in Salem and the neighboring towns, took the morning train for Manchester. On arriving at the station they were met by several gentlemen, and conducted to the Town Hall, which had been placed at the disposal of the Institute for the day by the courtesies of the town authorities.

After a cordial welcome, which was extended by Mr. Lewis N. Tappan in behalf of the citizens, the party, increased by additional arrivals, separated into groups and visited the several places of interest which had been designated, according as inclination prompted. Some went to Agassiz Rock,[1] a boulder of very large size, situated upon the top of Beaver-dam hill, about three miles from the town hall on the Essex road, and rests upon a small point of another rock so as to allow an open space between it and the underlying ledge. Several years since Prof. Agassiz visited this hill and was much interested in this particular rock; and on the occasion of a field meeting of the Essex Institute in this town during October, 1874, several members visited the boulder and named it "Agassiz Rock," in commemoration of that distinguished naturalist. Some went to Kettle Cove to examine two interesting and remarkable natural curiosities located in its vicinity, just within the limits of Gloucester. One of these, a large fissure in the rocks on the seacoast, through which the ocean thunders and tosses its spray, known as "Rafe's Chasm." The name is said to be derived from a man named Ralph, who resided near by. Its length forms a right angle with the shore, from which it extends more than two hundred feet. The other is "Norman's Woe," a large rock lying a few rods from the shore and connected with it by a reef of stones which the sea leaves bare at low tide. Longfellow, in "The Wreck of the Hesperus," has alluded to this rock and given it a kind of immortality. Eagle Head, and several of the fine beaches, including the "musical sands," which are situated on part of what is known as "Old Neck Beach," or "Musical Beach," and are alluded to in a notice of the meeting on Thursday, August 2, 1866,[1] were visited. This rocky coast is relieved by several of these beautiful beaches, especially at some of the inlets or coves which indent the coast and add greatly to the attractiveness of this town for summer residents. Everywhere the landscape is most picturesque and varied. The woods, intersected by numerous brooks and rivulets, offer many inducements to the botanist to make explorations, and be sure of a reward for his toil in the obtaining choice specimens of ferns that thrive so luxuriantly in many of the cool and sequestered places there found. Also other plants that thrive in this congenial soil and aspect, specimens of which were placed upon the table for examination.

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[1] See Bulletin of Essex Institute, Vol. VI, page 158.

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[1] See Proceedings of Essex nstitute, Vol. V, page 57.

The antiquary, as well as the lover of the picturesque and beautiful in Nature, can find much to interest him in the examination of the old records and in gathering up the traditionary lore that always clusters around our old New England towns. Manchester was settled about 1626, and was formerly a part of Salem, and known as "Jeffrey's Creek," named from William Jeffrey, an early settler and one of those who, with Roger Conant, John Lyford and others, separated from their brethren at Plymouth, about 1624, and joined those of the Dorchester Company who had set up a fishing establishment at Cape Ann, and removed thence to Salem in 1626, and formed the first permanent settlement in the colony of the Massachusetts Bay. Incorporated in 1640 as Manchester. An interesting series of articles on "The History of Manchester," is in course of printing in "The Beetle and Wedge," from the pen of John Lee, Esq., for many years the able and efficient town clerk.

At 1 o'clock the various parties reassembled at the Town Hall, where lunch was partaken, and the afternoon session was held. Many citizens of Manchester and places contiguous were present.

At 2.30 P. M. the meeting was called to order. The **President** in the chair. Records of the preceding meeting were read.

The **Secretary** announced the following correspondence:—

From Bern, Die Naturforschende Gesellschaft; J. S. Boothby, Philadelphia, Aug.

2; Buffalo Society of Natural Sciences, July 21; Calcutta, Geological Survey of India, Mar. 30; Frank M. Etting, Philadelphia, July 31; Charles Hammond, Monson, Aug.; Henry A. Homes, Albany, July 22; Mannheim, Verein fur Naturkunde, April 4; Lewis N. Tappan, Manchester, Aug. 3.

The Librarian reported the following additions to the library:—

By Donation.

Allen, Stephen M., of Boston. Religion and Science, by donor. 1 vol., 12mo.

Baxter, J. H., of Washington, D. C. Medical Statistics of the Provost Marshal General Bureau. Vols. 1, 2. 2 vols., 4to.

Bolles, E. C. Miscellaneous pamphlets, 10.

Cloutman, Wm. R. Letters by Wm. Warden. 1 vol., 8vo.

Hunt, T. F. New York Mirror, 1837–38. 1 vol., 4to. Popular Science Monthly, Aug. Centennial Eagle, July 4, 11, 18.

Johnson, Samuel. Kenrick's Exposition. 3 vols., 8vo. Writings by Prof. Frisbee. 1 vol., 8vo. Salem Directories, 1866, 1869. 1874. 3 vols., 8vo. Memoir of Dr. Holly. 1 vol., 8vo. Heavenly Union. 1 vol., 8vo. Greenwood's Miscellanies. 1 vol., 8vo. Sermons of Consolation. 1 vol., 8vo. Revised Statutes of Mass., 1836. 1 vol., 8vo. Greenwood's Sermons. 2 vols., 8vo.

Norris, C. H. Sermon preached at Lexington, Apr. 19, 1776, by Jonas Clark. 8vo pamph.

Palfray, C. W. The American State, by W. G. Dix. 1 vol., 8vo.

Payson, E. H. The California, 1846, '47, '48.

Perry, W. S., of Geneva, N, Y. Miscellaneous pamphlets, 7.

Putnam, A. P., of Brooklyn, N. Y. Easter Service of the Church of the Saviour, Apr. 16, 1876. 8vo. Discourse, Jan. 9, 1876. 8vo.

Putnam, F. W. Declaration of Independence and Washington's Farewell Address. 1 vol., 8vo.

Sanborn, Geo. Mass. Legislative Documents, House. 2 vols., 8vo. Senate 2 vols., 8vo. Order of the Day. 1 vol., 8vo. Miscellaneous pamphlets, 75.

U. S. Bureau of Education, through Hon. John Eaton, Commissioner. Report of the Board of Education of New York, 1874. 1875. Maryland, 1874. Connecticut, 1872. 1873, 1874, 1875. St. Louis, 1869–70, 1871–72. Pennsylvania, 1875. Iowa, 1874–75. Miscellaneous pamphlets, 84.

U. S. Department of Interior. Congressional Documents, 3rd Session, 43 Cong. 1 vol., 4to. 1st Sess., 43 Cong. 3 vols., 8vo. 2nd Sess., 43 Cong. 32 vols., 8vo.

U. S. Engineers' Office, through Gen. A. A. Humphrey, Chief of Engineers. Report of Explorations in Utah in 1859, by J. H. Simpson. 1 vol., 4to. Washington, 1875.

U. S. Patent Office. Official Gazette. May 30, June 6, 27, July 4, 11, 18, 25, 1876.

By Exchange.

American Association for the Advancement of Science. Proceedings of, Aug., 1875. 1 vol., 8vo.

Berlin, Zeitschrift für die gesammten Naturwissenschaften. Band xi, xii. 1875. 8vo.

Bologna, Riale Accademia delle Scienze. Rendiconto, 1875–76. 8vo.

Boston Public Library. Bulletin for July, 1876.

Bremen. Naturwissenschaft Verein zu. Abhandlungen. Band iv, Heft. iv, 1876. Band v, Heft. i, 1876.

Brünn, Naturforschenden Vereines in. Verhandlungen. Band xiii. 8vo. Katalog. 8vo.

Canada, Geological Survey of. Report of Progress for 1874–75. 8vo.

Chemnitz, Naturwissenschaftlichen Gesellschaft zu. Bericht. Jan., 1873, Dec., 1874. 8vo. Phanerogamen Flora von Chemnitz und Umgegend. 4to.

Danzig, Naturforschende Gesellschaft in. Schriften. Band iii, Heft. iv. 8vo.

Frankfurt, Zoologische Gesellschaft in. Zoologische Garten, Jahrg xvi, Nos. 7–12. 1875.

Freiburg, Naturforschenden Gesellschaft zu. Berichte. Band vi, Heft. iv. 8vo.

Le Mans, d'Agriculture, Sciences et Arts de la Sarthe. Bulletin. Tome xxiii. 1875.

Marburg, Gesellschaft zur Beförderung der gesammten Naturwissenschaften in. Sitzungs-berichte Jahrg. 1874, 1875. Schriften. 1874. 8vo.

Paris, France, Crosse et Fischer. Journal de Conchyliologie. Tome xvi. 3e Série. No. II. 1876.

Paris, Société d'Acclimation. Bulletin Mensuel. Tome iii. Nos. 3, 4. 1876. 8vo.

S' Gravenhage, Nederlandsche Entomologische Vereeniging. Tijdschrift Voor Entomologie. Achttiende Deel i, ii, iii, iv. Aflevering. 1874–75.

Societe Entomologique de Belgique. Annales. Tome xvii. Fasc. i, ii. 1874–75. Tome xviii. Fasc. i, ii, iii. 1875–76. 8vo.

Tasmania, Royal Society of. Notices of Papers and Proceedings of the, for 1874. 12mo.

Vereins für Erdkunde. Notizblatt Folge iii, Heft. xiv.

Wien, K. K. Zoologisch-botanische Gesellschaft. Verhandlungen. Band xxv. Jahrg. 1875. 8vo.

Würzburg, Physikalisch-medicinische Gesellschaft in. Verhandlungen. Neue Folge ix, Band i, ii, Heft. 8vo.

Publishers. American Journal of Science. Beetle and Wedge. Boston Globe. Bradford New Era. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn City Item. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Sailors' Magazine and Seamen's Friend. Salem Gazette. Salem Observer. Salem Post, Salem Register. Turner's Public Spirit.

The President in his opening remarks alluded to the great pleasure the Institute derives in holding a field day in this town or vicinity, a locality rich in all that interests the student of Natural History. The woods on the one side, and the sea-shore on the other, offer an extensive field for observation and study. Meetings have been occasionally held near this great belt of woods that stretches back from the town and extends somewhat parallel with the coast from Beverly to Gloucester. In one part are the Chebacco ponds, a cluster of lovely lakes lying within the limits of the towns of Essex, Hamilton and Wenham; in another the swamps where the magnolia grows in superb luxuriance, and also near the foot of the trunks of some of the lofty pines and hemlocks that little alpine plant, the *Linnæa borealis*, is found; thus representatives of the flora of the North and of the South find here a congenial soil. He spoke of his familiarity with, and wanderings through, these woods and along these shores some thirty or more years since, and noted some of the great changes that have occurred, especially by the opening of the railroad, thus rendering available the land adjacent to the rocky cliffs of the coast for the summer residences of the citizens of the metropolis. He recalled some of the incidents of the early field meetings in this town, and paid a passing tribute of respect to several of those who then took an active part in our doings and have long since ceased from their labors.

The President then called upon Vice President F. W. PUTNAM, who in response said that he had not had the opportunity for a ramble, as he did not arrive until noon. He had, however, seen a number of Indian articles in the house of General Tannatt, by invitation, and he had been much interested in a human skull found in Colorado and now in the General's collection. This skull so closely resembled the ordinary form of the Algonquin Indians, such as are found in the Indian burial places in Massachusetts, as to lead to the belief that it had belonged to an Indian of the same great family with our New England tribes, though it was very venturesome to attempt to place an isolated human skull in its proper ethnic group.

Mr. Putnam then gave a general account of the several forms of skulls prevailing among the American tribes, and extended his remarks to a brief general review of

Indians and Eskimos, and their resemblances to others of the great Mongolian race.

The **President** remarked, that, in this centennial year of the Republic, the reminiscences of the past involuntarily come to our recollection. On this occasion, those relating to the early botanists would especially claim our consideration.

One hundred years since, the far-famed Rev. Dr. M. Cutler, then the minister of the Hamlet Parish in Ipswich, since incorporated as the town of Hamilton, roamed through these woods and was undoubtedly collecting the materials for his paper, published in 1784, in the first volume of the Memoirs of the American Academy, entitled "An Account of some of the Vegetable Productions naturally growing in this Part of America, botanically arranged." Some fifty years since William Oakes of Ipswich, one of the most distinguished botanists of New England, was collecting the plants of this region. His writings on these subjects, and the beautifully preserved specimens in his herbarium which he liberally distributed, gave to these woods a world-renowned reputation as one of the natural flower gardens of America.

The President then called upon Mr. **John Robinson** to give some account of the botany of this vicinity.

Mr. **Robinson**, in comparing the flora of Essex County, particularly that of Cape Ann, with more Northern and Southern regions, said:—

We have here representatives of both the White Mountain and New Jersey plants. Of the species growing at the base of the White Mountains, there are several Ferns and Lycopods, two species of Viburnum, the Striped Maple, American Yew, Red-berried Elder, and many others; while along the coast the Alpine Potentilla is often found.

Of the southern species we have the Magnolia glauca, Yellow Thistle, and perhaps a few others. The White Cedar (*Cupressus thyoides*) reaches here its northern limit, and its name is in Maine and New Hampshire transferred to the Arbor Vitæ (*Thuja occidentalis*), which has been the cause of much confusion.

Mr. Robinson spoke of the water plants and those of the seashore, stating that there was a much larger number of species to be found than most persons supposed, and considering the natural features of the region, the Essex Flora might claim to be a very rich one.

The carnivorous habits of the *Drosera* were then described with the aid of a diagram. If an insect alights on the leaf, the tentacles, one after another, curl over and entrap it. The insect is digested by the plant and then the leaf opens again.

Darwin's experiments with this plant were then explained. He tried placing various substances upon the disc. Meat, he found, was enclosed and digested. Glass was enclosed for a certain time and then rejected.

Blowing hard upon the plant had no effect upon it. The secretion he found was almost exactly like animal pepsin.

In another genus nearly allied to *Drosera*, the *Dionæa*, the leaves fold over and inclose insects, which are then digested; but in this case the leaves are partly open at the edges, so that small insects can escape, the larger ones only being held. These leaves will repeat the process two or three times. Two species of *Drosera* are common in this locality.

The remarks were closed with some notice of a cone which was imbedded in the wood of the tree, and exhibited by Col. Tannatt. The wood had grown for twenty-five years in order to entirely cover the cone.

Prof. E. S. **Morse** made some additional remarks concerning the *Drosera.* It may be put to sleep by application of ether; paralyzed by pricking at a certain point; and may even be given a fit of dyspepsia by giving it certain kinds of food. Prof. Morse also described the manner in which grasshoppers make their peculiar chirping noises, and the notes they utter. Sometimes we are almost deafened by the noise they make. This is produced by rubbing the legs up and down against the wings. The rasping vibrating surface makes the noise we hear. It is so high in pitch no musician has yet recognized its key. In fact some persons cannot hear it; they are sound-blind to sounds of so high a pitch. If a whistle be sounded in presence of a large number of people at a successively higher and higher pitch, there will be finally some who cannot hear it, and as the pitch is raised higher still a larger number of persons will cease to hear it. The crickets rub the upper wings against the under. They have a note for sunlight, and a different one for cloudy weather. The males are in this case the singers, The cicada sings by means of a tendon stretched across a membrane which vibrates like a drum when the tendon is pulled or twitched rapidly. The vitality possessed by some of these insects was dwelt upon. A young lady of Salem, in making a preparation of a grasshopper, discovered that after the head was removed, carrying with it all the interior portion of the body (disembowelling it in fact, so that only the outer skin or shell with the wings remained), certain nerve centres in the rings of the shell upon being pricked caused the wings to flutter rapidly for some time.

Rev. **GEORGE L. GLEASON**, of Manchester, extended greeting to the members of the Institute. Natural History was out of his line and he had never given much attention to local history. He referred to Mr. John Lee and Mr. Lewis N. Tappan, both of Manchester, as more acquainted with the history of the town.

The President then called upon the Rev. **JAMES FREEMAN CLARKE**, who was present and responded as follows:

I am much obliged, Sir, for the honor you do me, but I feel like one who finds himself among a race whose language he does not understand. I should be very glad instead of using my own voice to hear more from Prof. Morse about the voice of the grasshopper. Little was known in my younger days about these things of science.

We were taught at Cambridge something of chemistry, and a very little about geology and mineralogy. But I remember when I first went to live near the Falls of the Ohio, I one day found what I supposed to be a petrified wasp's nest or enormous honeycomb; but I was surprised afterwards to learn that it was a fossil. In botany we were taught, at Cambridge, only the Linnæan system; and it amounted to learning the names of orders, genera, etc., and we found it not very interesting. Professor Nuttall was there then, but we never had any teaching from him.

I was reminded while listening to Mr. Putnam's account of the evidence of the movements of races on this continent, derived from the characteristics of the Indian skulls found in different parts of the country, of that collateral branch of knowledge, comparative philology, by which we study the linguistic characteristics of races. Perhaps some of you may not know how much light has been thrown upon the history of the human race by that study. If we had been told a few years ago that we could go back so far (some two or three thousand years before authentic records) in the history of our race, by the study of language, we should have thought it a most amazing statement. But such is the fact, as I can show you in a few minutes.

It was formerly thought that the Latin came from the Greek, but we now know that it is the oldest language of the two. It has long been known that there are words in the Teutonic languages which have a remarkable relation to words in the Latin and Greek languages; but this was not understood till the Sanskrit language began to be studied. Sir William Jones found that the principal languages of Asia and Europe had a common origin. Sanskrit was at first believed to be the original parent language, but it was afterward found to be the elder sister. After that was studied we could explain many of the irregularities of the Greek and Latin words. This is very apparent in the formation of the substantive verb, to be. The Latin "Sum, Es, Est" was so irregular that it was thought by the elder grammarians that "Es," and "Est," must come from some obsolete root. But in Sanskrit we find it "Asmi," I am; "Asi," Thou art; "Asti," He is,—which makes the derivation of the second and third persons plain. In the Zend, or ancient Persian, it is "Ahmi, Ahi, Asti." In the Gothic it is "Im, Is, Ist." In the Slavic "Yesmi, Yesi, Yesto." In the Irish it is "Esmi, Essi, Esti." So the English word "Daughter" is in Sanskrit, "Duhitar;" while in Greek it is "Thugateer." Here the Zend, which is "Dughter," gives the connecting link. We now know what the ancient Greeks did not themselves know,—the origin of this word of theirs. In Sanskrit it means, not only "Daughter," but also "Milkmaid." The ancient Arians, a pastoral people, and keeping many cows, employed their daughters to milk, and so the one word was employed in both meanings.

But there are some words in each language entirely distinct and peculiar to it. We see the reason of this. When the first parent race emigrated from central Asia and swept on westward, branches turned off in various directions, one to the south, another to the southwest, others to the southeast and southwest of Europe, etc. Branches flowing to the north formed the great Celtic, Slavic and Teutonic races.

When these tribes separated from the parent stock they must have taken with them the civilization which they had before separating. So the several branches or varieties carried with them the same words for common things which they all had when together, such as the word for "House," showing that they lived in houses before migrating from their ancient homes. Thus too we find that there are similar words in all these great linguistic streams for ox, horse, sow, mouse, wheat, clothes, the numerals one, two, three; also for plough, hatchet, hammer, gold, silver, copper, tin. But when we find the names of the same thing differing in all these tribal languages, we may be confident that the original race knew nothing of it, and did not use it. Such words as that for *sail*, or that for *boats*, propelled by other means than simple oars, are not found common to all; hence they did not have sails or sail boats when together.

The result of such unexpected new discoveries in so old a science is finally to bring us to the conclusion that there is no end to knowledge. The discovery of some new instrument or method of investigation will open to us means of increasing our knowledge. In our time the wonderful discovery of the meaning of the lines in the solar spectrum has enabled us to do what we never could have done before, or imagined possible to have done. There is no reason for doubting that many similar potent instruments for penetrating the mysteries of Nature are yet to be discovered.

I thank you, ladies and gentlemen of the Essex Institute, for listening to me so patiently, and wish you all success in your studies in these deeply interesting departments of knowledge.

Mr. RICHARD H. DANA being called upon, after disclaiming any special knowledge of the subjects discussed, saying that he could make out as clear a case of ignorance of scientific questions as could Dr. Clarke, related in confirmation of this an incident at his father's house after he had graduated. President Woolsey, who was our guest, asked me if I had seen, in California, the *cactus*. Not knowing what the cactus was, I endeavored to get over the difficulty by saying that I had not been in the interior where the rich lands and gardens were, but on the dry, sandy seacoast. My family were somewhat disturbed, they being aware, as I was not, that the cactus grew in just such dry, sandy places. I then described a large "prickly pear," with its beautiful flower and blossoms, which we found on the coast, and this, to my confusion, was the cactus itself.

As Dr. Clarke has said, we collegians thought moral science the only important study. After graduating at Harvard I thought of taking a course in philosophy with Professor Marsh, at Burlington, Vt. He asked me what I knew of natural science. I told him, nothing. To teach moral and intellectual philosophy thoroughly (he said) there must be a ground-work of the natural sciences. The aying of this foundation, I found, would take too much time, and I did not attempt his comprehensive course.

I therefore can contribute nothing to your purposes. But when I have such an opportunity to come and listen to such discussions I like to take advantage of it.

If I shall not be occupying too much of your time, Mr. President, I will give an account of my visit to the volcano of Mauna-Loa during the eruption of 1859, for the most illiterate savage can describe what he has seen. The lava flowed through a tortuous course of forty miles in length. I procured the services of two natives with their boat to take me to the place where it emptied into the sea. On arriving near the place the scene became one of the utmost grandeur. There was no moon, but the stars shone with that brightness which is never seen outside of the tropics. There was a light and pleasant breeze. The space which the lava occupied, as it descended into the sea, was three miles in width; that is to say, not in an unbroken line, but pouring in, sometimes at one end, sometimes at the other, and again in the middle. The lava cools on the surface quickly and assumes a dark lead color, but where it is hot and flowing, or where this crust is broken through, it shows a beautiful scarlet or blood-red color. As the lava flows slowly along it meets with obstructions and resisting forces which for a time create a barrier; but after a while having risen higher than the obstruction, it overflows, and finally carries away the débris and bears it along in its course, where it tumbles over, sometimes from a considerable height, a mass of lava, earth and stone; and, with a loud hissing noise, accompanied by a series of explosions like the rattling of small arms along a line of battle, plunges into the sea. The molten lava heats the sea, so that it was appreciable even at the distance I was, not less than a mile away. I endeavored to induce the men to take the boat nearer, but nothing that I could offer prevailed upon them to do so. This reluctance arose partly from their superstition; the volcano being the residence of their goddess Pelé, whose anger was evinced by its thunderings and eruptions. They gave, however, as an excuse for not approaching nearer, that the heat of the water would melt the pitch from the seams of the boat, and that we should all sink. Of this of course there could be no danger, for I found upon placing my hand in the water that it was just a little warm.

Imagine such a scene here; the mountain forty miles away. You hear of the approach of the lava from day to day, for it moves slowly in its course to the sea. When it reaches Manchester it destroys this place utterly, removing all that is before it, the houses and all the work of men's hands; the harbor, creeks and all vegetation, involved in one general destruction. In the process of time the lava cools and cracks; vegetation starts in the seams and crevices of the surface, and finally a new soil covers it; and you have a new harbor, a new soil, and a new town, perhaps a mile or two farther into the ocean.

Mr. LEWIS N. TAPPAN was called upon and gave a brief sketch of the local history of Manchester. It was first settled in 1626 by a few fishermen from Cape Ann, William Jeffries, William Allen, William and John Norman and others. It was called Manchester simply because many of the settlers came from Manchester in England. Mr. Tappan thought some more appropriate name, like *Magnolia*, or *Masconomo* (the name of the Indian chief who brought strawberries to Gov. Winthrop's party, which landed here on their way to Salem in June, 1630), would have been better. He then referred to the partial destruction of the schooner "Nancy," by the British, at Mingoe's beach, A. D., 1813, and to the fight between the Chesapeake and Shannon, and other naval engagements that have occurred near the Manchester shore.

Rev. C. A. **Bartol** remarked that he had great pleasure in seeing the cup of this communion table passing round. There should be no war between science, philosophy and religion. All meet on common ground in pursuit of knowledge. Philosophy must reign, but must not govern. It has no right, as religion has no right, to shut out any facts that knowledge finds. Religion reigns over all, but without injustice to any. Life is the nearest fact, the most universal thing. The mountain crumbles, but the plant springs up and insects grow. The trees, the beasts, and the men are of one stuff. Who can say what of the mountain is in the man? What of granite in the plant? What shall we say of the notion of a Deity as out of matter? This precipitate of mind into matter ever tends to go back into mind. The Agassiz Boulder suggests the saying that Queen Elizabeth's mind was like one of those Druidical rocking-stones, which the slightest touch can disturb, but the greatest power could not overthrow. I know a tree near here, three hundred, perhaps five hundred, years old. We think the tree is the weak yielding thing. But we know very well how this tree clings to the rock and sucks food from it, as the child from its mother's breast. No doubt in those five hundred years that ledge has changed very much. The rock has crumbled, but the tree remains. The great sentiments, the religious sentiments, will survive after all these hard elements of nature have melted and changed and passed away. Here is illustrated the immortality of the principle of life.

The time drawing near for the arrival of the train for Salem, the meeting adjourned, after having passed a vote of thanks, offered by Mr. W. P. **Upham**, to the town authorities and to the citizens for their kindness and courtesies.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., SEPT., OCT., NOV., 1876. NO. 8.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, OCTOBER 2, 1876.

MEETING this evening at 7.30 o'clock. PRESIDENT in the chair. Records of preceding meeting read.

Mrs. Charles Arey and Mr. John P. Reynolds of Salem were elected resident members.

Mr. ARTHUR W. FOOTE was elected the curator of Music, vice Mr. C. H. HIGBEE who declined a reëlection.

Mr. W. D. NORTHEND stated that Mr. R. S. SPOFFORD of Newburyport, had discovered a curious oven on or near his grounds, and would like to have the Institute examine it. He also tendered Mr. Spofford's invitation to the Society to hold a field meeting at his place.

Mr. JAMES KIMBALL presented several coins.

Mr. F. W. Putnam, in behalf of the author, presented the following communication: —

LIST OF BIRDS COLLECTED BY MR. CHARLES LINDEN, NEAR SANTAREM, BRAZIL.—By J. A. Allen.

In February, 1873, Mr. Linden left New York for Pará, Brazil, for the purpose of collecting objects of Natural History. Arriving at Pará at the height of the rainy season, he found the constant rains and the inundated state of the country highly unfavorable for his work, and soon pushed on to Santarem, on the Amazon, five hundred miles west of Pará. Here he found the conditions for work more favorable, and adopted this point as the scene of his labors, spending most of his time here from early in April till the end of July. In June he made an excursion to Rhomes, sixty miles distant, where he spent a few weeks, and in August passed a short time collecting at Anjos and Marajo, at the mouth of the Amazon. The chief part of the collection was hence made at Santarem, in the campos and sparsely wooded region of the immediate vicinity. The notes added are those accompanying the specimens. The collection was made chiefly under the auspices of the Museum of Comparative Zoölogy, Cambridge, Mass., where the greater part of Mr. Linden's collection of birds still remains. The collection embraced two hundred and fourteen specimens, representing one hundred and twenty-eight species.

1. *Turdus albiventris* Spix.[1]

2. *Mimus saturninus* Licht. Santarem, April 12; common.

3. *Donacobius atricapilla* (Linn.). Santarem.

4. *Vireosylvia agilis* (Licht.). Rhomes[2], June 18; common.

5. *Dacnis cayana* (Linn.). Santarem, April 12; common.

6. *Calliste cayana* (Linn.). Santarem, April 12 and June 2; common in thickets.

7. *Tanagra episcopus* Linn. Santarem, April 12 and June 6; common in thickets.

8. *Tanagra palmarum* (Max.). Santarem, June 5; common in woods and thickets.

9. *Ramphocœlus jacapa* (Linn.). Santarem, Marajo and Para; common.

10. *Lanio atricapillus* (Gm.). Santarem, May 27; not common.

11. *Tachyphonus cristata* (Gm.). Santarem, May 27; in small flocks in thick woods.

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[1] The nomenclature adopted in this paper is, with few exceptions, that of Messrs. Sclater and Salvin's "Nomenclator Avium Neotropicalium."

[2] A plantation so-called, mentioned in Mr. Linden's notes as being sixty miles from Santarem.

12. *Spermophila castaneiventris* (Cab.). Santarem, May 1; found among the reeds along edge of the Amazon River.

13. *Spermophilus mysia* (Vieill.). Santarem, June 5; common in the vicinity of the town.

14. *Paroaria gularis* (Linn.). Santarem, May 1; rather common in the campos.

15. *Sycalis columbiana* Cab. Santarem, April 12; in small flocks on the campos.

16. *Ostinops yuracarium* (Laft. & d'Orb.). Santarem.

17. *Ostinops cristatus* (Gmel.). Santarem, May 15; common.

18. *Cassicus persicus* (Linn.) Santarem, April 10; common and in full plumage.

19. *Icterus croconotus* (Wagl.).

20. *Molothrus bonariensis* (Gm.). Santarem, June 5; common near the town.

21. *Gymnomystax melanicterus* (Vieill.). Rhomes, June 18; Marajos, August 1; common.

22. *Leistes guianensis* (Linn.). Santarem, May 1-24; common.

23. *Cassidix oryzivora* (Linn.).

24. *Tænioptera nengeta* (Linn.). Campos near Anjos (eastern part of the island of Marajos), Aug. 1.

25. *Tænioptera velata* Licht. Marajos, August 1; open campos, rare.

26. *Arundinicola leucocephala* (Linn.). Rhomes, June 28; common near the reeds along the Tapajos River.

27. *Elainea pagana* (Licht.). Santarem, June; very common.

28. *Myiodinastes solitarius* (Vieill.). Santarem, May 19; common about clearings.

29. *Megarhynchus pitangua* (Linn.). Santarem, May 28; common in clearings near deep woods.

30. *Myiarchus tyrannulus* (Muell.). Santarem, May 23; common.

31. *Myiarchus nigriceps* Scl. Santarem, May 23; common.

32. *Empidonomus varius* (Vieill.). Santarem, June 2; common on the outskirts of woods.

33. *Tyrannus niveigularis* Scl. Santarem, April 12; common in the open campo.

34. *Milvulus tyrannus* (Linn.). Marajo, August 5; very common.

35. *Pipra*, sp. incog.

36. *Tityra personata* Jard. & Selby. Santarem, May 24; common in flocks in deep woods.

37. *Pachyrhamphus cinereus* (Bodd.). Santarem, June 5; common near the town.

38. *Phœnicocercus carnifex* (Linn.).

39. *Querula cruenta* (Bodd.). Santarem, May 18; rare, in deep woods.

40. *Furnarius*, sp. incog.

41. *Dendrornis multiguttata* (Lafr.). Santarem. April 20: common.

42. *Picolaptes bivittata* (Licht.). Santarem, April 8; common in thickets.

43. *Thamnophilus luctuosus* (Licht.).

44. *Thamnophilus doliatus* (Linn.). Marajo, August 10.

45. *Rhopoterpe torquata* (Bodd.). Deep woods near Santarem, May 19; common.

46. *Eupetomena macrura* (Gm.). Campos near Santarem, April 20; common.

47. *Lampornis gramineus* (Gm.).

48. *Lampornis mango* (Linn.). Marajo, August 10; common.

49. *Thalurania nigrofasciata* Gould.

50. *Eucephala cærulea* (Vieill.).

51. *Thaumatias linnæi* Bon.

52. *Podager nacunda* (Vieill.).

53. *Chordeiles acutipennis* (Bodd.). Common in the campos near Anjos, August 5.

54. *Stenopsis ruficervix* (Scl.).

55. *Picumnus minutus* (Linn.). Marajo, August 10; common.

56. *Campephilus melanoleucus* (Gm.). Santarem, June 5; common.

57. *Celeus citrinus* (Bodd.). Santarem, in deep woods, April 10; common.

58. *Momotus brasiliensis* Lath. Rhomes, June 29; common in deep woods.

59. *Ceryle torquata* (Linn.). Santarem, June 5; common.

60. *Ceryle amazona* (Lath.).

61. *Ceryle americana* (Gm.). Santarem, May 1; rather rare.

62. *Ceryle superciliosa* (Linn.).

63. *Trogon melanurus* Sw. Santarem, May 18; common.

64. *Trogon meridionalis* Sw. Santarem, May 22; deep woods, rare.

65. *Trogon viridis* Linn. Rhomes, June 28; common.

66. *Galbula viridis* Lath. Santarem, April 10; common near streams.

67. *Bucco tamatia* (Gm.). Rhomes, June 9; deep woods, rare.

68. *Monasa morpheus* (Hahn). Santarem (May 21), and Rhomes, June 29; common in deep woods.

69. *Monasa nigrifrons* (Spix). Santarem, April 12; common in small flocks about plantations.

70. *Chelidoptera tenebrosa* (Pall.). Campos about Santarem, April 20.

71. *Crotophaga ani* Linn. Rhomes, June 28; common, in small flocks.

72. *Crotophaga major* Linn. Rhomes, June 18; in small flocks.

73. *Diplopterus nævius* (Gm.). Marajo, August; in small flocks of four to seven or eight.

74. *Dromococcyx pavoninus* Pelzeln.

75. *Piaya cayana* (Linn.). Santarem, April 18; common in thickets.

76. COCCYGUS LINDENI, n. sp.

Above olivaceous-gray, with bronzy reflections, and tinged with ash on the head; beneath cinereous, fading to white over the abdomen; remiges wholly without rufous; under side of wings with a faint ochraceous tinge at the base of the quills; outer rectrices black, broadly tipped with white; middle pair like the back. wholly unicolor (not darker at the tip as in *C. americanus*). Upper mandible and tip of lower black; rest of lower mandible and the edge of the upper at the base, yellow. Tail much graduated, the middle rectrices being 1·75 longer than the outer. Length, 10·50; wing, 5·15; tail, 5·50.

This species more closely resembles *C. americanus* than any other well-described species, from which it differs in its considerably smaller sides, in the total absence of rufous in the remiges, and in the strongly cinereous color of the lower parts. The bill and the tail are colored precisely as in *C. americanus*, except that the middle pair of rectrices are unicolor, instead of darker near the tip. The dorsal surface is also of a rather darker tint, with rather more ash on the head.

This species seems to also bear a close resemblance to *C. euleri* Cab. (Journ. f. Orn., xxi Jahrgang, p. 72, Jan., 1873), with which it may prove to be identical, but Cabanis's very meagre description is insufficient to enable me to fully decide. I hence adopt a provisional name for the species above described. Cabanis's specimen of *C. euleri* was obtained at a far more southern locality,—Cantagallo, in the Province of Rio de Janeiro.

Of the *C. lindeni* I have but a single example, collected by Mr. Linden, in whose honor I have named the species, at Santarem, April 19, 1873.

77. *Rhamphastos erythrorhynchus* (Gmel.). Santarem, April and May; common in the forests.

78. *Rhamphastos arig* Viel. Santarem, June 5; common in deep woods.

79. *Pteroglossus aracari* (Linn.). Santarem; common in the forests.

80. *Selenidera maculirostris* (Licht.). Santarem, May 18; common in deep woods.

81. *Ara ararauna* (Linn.). Santarem.

82. *Ara macavuana*. Marajo, August 1; rare, in small flocks.

83. *Conurus aureus* (Gm.). Santarem, April 10; in small flocks.

84. *Conurus roseifrons* Gray. Santarem, May 28; in small flocks.

85. *Brotogerys virescens* (Gm.). Santarem, April 15; common.

86. *Psittacula passerina* (Linn.). Santarem, June 1; seen in small flocks.

87. *Pulsatrix torquata* (Daud.).

88. *Asturina nitida* (Lath.). Santarem, July 12; in deep woods.

89. *Asturina natteri* Scl. & Salv. Rhomes, June 10; near clearings.

90. *Spizætus ornatus* (Daud.). Rhomes, June 28; rare.

91. *Accipiter bicolor* (Vieill.). Santarem.

92. *Hypotriorchis rufigularis* (Daud.). Santarem, May 21; deep woods, rare.

93. *Harpagus diodon* (Temm.). Santarem, May 1.

94. *Milvago chimachima* (Vieill.). Anjos, August 8; campos, rare.

95. *Polyborus tharus* (Mol.). Rhomes, June 20; rare. Iris, light brown.

96. *Cathartes aura* (Linn.). Marajo, August; common.

97. *Plotus anhinga* Linn. Marajo, August 8; common.

98. *Ardea cocoi* Linn.

99. *Ardea egretta* (Gm.). Santarem.

100. *Ardea candidissima* (Gm.) Santarem, May 1; singly, near the banks of the Amazon.

101. *Tigrisoma brasiliense* (Linn.).

102. *Cancroma cochlearia* Linn. Marajo, August 5; common.

103. *Ciconia maguari* (Gm).

104. *Tantalus loculator* Linn.

105. *Ibis rubra* (Linn.). Marajo, August 5; common.

106. *Theristicus melanopis* (Gm.).

107. *Platalea ajaja* (Linn.). Anjos, August 1; common in small flocks.

108. *Columba rufina* (Temm.). Rhomes, June 13; in small flocks; not common.

109. *Zenaida ruficauda* Bon. Santarem, June 1; in small flocks on the campos.

110. *Chamæpelia passerina* (Linn.). Santarem, June 5; common in small flocks.

111. *Chamæpelia talpacoti* (Temm.). Santarem and Rhomes, in small flocks about clearings.

112. *Leptoptila rufaxilla* (Rich. & Bern.). Santarem, June 6; seen singly, and apparently not common.

113. *Pipile cumanensis* (Jacq.). Santarem, May 10; deep woods; not common.

114. *Ortalida ruficeps* Wagl.

115. *Odontophorus guianensis* (Gm.). Santarem, May 27; not common.

116. *Aramides mangle* (Spix).

117. *Porphyrio parvus* (Bodd.). Rhomes, June 18; common, in small flocks.

118. *Eurypyga helias* Pallas.

119. *Parra jacana* (Linn.). Santarem, May 4; common.

120. *Vanellus cayanensis* (Gm.).

121. *Ægialitis collaris* (Vieill.). Anjos, August 5; rather rare.

122. *Gallinago frenata* (Max.). Marajo, August; common in marshy grounds, in small parties of three to five individuals.

123. *Ereunetes petrificatus* (Ill.). Marajo, August 4; common in flocks.

124. *Gambetta flavipes* (Bon.). Marajo, August 10–20; common in flocks; extremely shy.

125. *Tringoides macularius* (Linn.). Santarem, April 12; common along the river banks. Specimens were obtained both in the mature and immature plumage.

126. *Crypturus cinereus* (Gmel.). Santarem, July 6; common in deep woods.

127. *Crypturus obsoletus* (Temm.).

128. *Crypturus pileatus* (Bodd.).

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REGULAR MEETING, MONDAY, OCTOBER 16, 1876.

Meeting this evening. The PRESIDENT in the chair. In the absence of the Secretary, Mr. WM. P. UPHAM was chosen Secretary *pro tem.* Records of preceding meeting read.

Mr. J. S. Kingsley, of Salem, was elected a resident member.

Dr. F. H. Hance of Whampoa, China, was elected a corresponding member.

◆

REGULAR MEETING, MONDAY, NOVEMBER 6, 1876.

MEETING this evening. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From F. E. Abbot, Boston, Sept. 6; J. A. Allen, East Jaffrey, N. H., Aug. 13; E. P. Boon, New York, Nov. 1; P. S. Boothby, Philadelphia, Aug. 15, Sept. 1, 6, Oct. 1, 4; Bresil, Bureau de la Commission de l'Empire; Bruxelles, Acad. Roy. des

Sciences, des Lettres, et des Beaux-arts de Belgique; Buffalo Historical Society, Sept. 7, 25; Cook, Son & Jenkins, Philadelphia, Aug. 15; James T. Crane, Indianapolis, Sept. 23; Davenport Academy of Natural Sciences, Sept. 15; George D. Dimon, Utica, Sept. 1; L. P. Farmer, Philadelphia, Sept. 6, 30; Samuel A. Green, Boston, Aug. 14; Frankfurt, Senckenbergischen Naturforschenden Gesellschaft, Feb. 26; Harvard College, Museum of Comp. Zoology, Oct. 11; T. W. Higginson, Newport, R. I., Oct. 5; Ernest Ingersoll, New York, Sept. 27, Oct. 11; A. C. Kendall, Boston, Sept. 13; George Collins Levey, Philadelphia, Oct. 16; George Lincoln, Hingham, Sept. 19; Lisbonne, Acad. Royale des Sciences, Aug. 23; J. Dewitt Miller, Cross River, N. Y., Oct. 24; London, Society of Antiquaries, Oct. 16; Lyons, Société d'Agriculture, Histoire Naturelle, et Arts Utiles, July 20; New Hampshire Historical Society, Sept. 9; New Jersey Historical Society, Sept. 6, Oct. 11; New York Historical Society, Sept. 8, Oct. 12; New York Mercantile Library Association, Oct. 11; Ohio Historical and Philosophical Society, Sept. 7, Oct. 13; Samuel C. Oliver, Philadelphia, Aug. 19; George B. Phippen, Boston, Aug. 20, Sept. 7; John S. Pierson, New York, Oct. 10; H. J. Pratt, Chelmsford, Sept. 6; F. W. Putnam, Cambridge, Oct. 24; Aaron Richardson, Unionville, Missouri, Sept. 4; Thos. S. Roberts, Minneapolis, Minn., Oct. 29; D. A. Rogers, Chicago, Ill., Oct. 18; W. Hudson Stephens, Lowville, N. Y., July 16; Wm. W. Stewart, Buffalo, N. Y., Sept. 29; Stockholm, Acad. Roy. Suedoise des Sciences, Juil. 6; Thomas R. Trowbridge, New Haven, Conn., Sept. 6; United States Centennial Commission, Philadelphia, Oct. 9; Vermont Historical Society, Sept. 7, Oct. 18; Williams' Lecture Bureau, Boston, Sept. 3.

The Librarian reported the following additions :—

By Donation.

Abbot, F. E., of Boston. Index, Vols. 5, 6, 1874, 1875. 2 vols., folio.

Boardman, Sam'l L., of Augusta, Me. Report of the Maine Board of Agriculture, 1872, 1873, 1874. 3 vols., 8vo.

Bolles, E. C. Universalist Register, 17 numbers. Centennial Eagle, Aug. 22, 29, Sept. 5. Miscellaneous pamphlets, 5.

Buffalo Young Men's Association. Catalogue of the Library. 1 vol., 8vo. Buffalo, 1871. First Supplement to the Catalogue, 8vo. 1872. Annual Reports of. 8 pamphlets.

Foster, W. J. American Agriculturist, 1867 to 1875. Cultivator and County Gentleman, 1870 to 1875. The Horticulturist, 1859 to 1866. Journal of Health, 1859 to 1864. New England Farmer, 1859 to 1864.

Goss, Elbridge H., of Melrose, Mass. Historical Address at Melrose, July 4, 1876, by donor. 8vo.

Green, S. A., of Boston. Historical Address at Groton, July 4, 1876. Miscellaneous pamphlets, 8.

Hart, C. F., of Philadelphia. Miscellaneous pamphlets, 15.

Hunt, T. F. Reference Catalogue of Current Literature. 1 vol., 8vo. Genealogy of the Hunt Family. 1 vol., 8vo. Christian Lyre and Supplement. 1 vol., 12mo. History of Miss Meredith, Vol. I. 1 vol., 8vo. The Jilt. 1 vol., 8vo. Jubilee Memorial. 1 vol., 8vo. Anglo-Chinese Calendar, 1854. 2 vols., 8vo.

Indiana, Geological Survey of. Report for 1875, by E. T. Cox. 1 vol., 8vo.

Kimball, James. Cape Ann Advertiser, July, Aug., Sept., 1876. Proceedings of the G. Roy. Arch Chapter of Massachusetts, Jan.,–Dec., 1874, Mar 9, Dec., 1875.

Lawrence, Abbott, of Boston. Journal of a Tour to Niagara Falls in 1805, by Timothy Bigelow. 1 vol., 8vo.

Lee, John C. Commercial Bulletin, June, July, Aug., Sept., Oct., 1876.

MANNING, RICHARD C. Boston Daily Advertiser, Aug., Sept., 1876.

MERRITT, L. F. Essex County Mercury, Sept., Oct., 1876.

MILLS, ROBERT C. Whitaker's Almanac, 1872, 1875, 1876. Christian Observatory, 9 numbers.

NEWHALL, THOMAS A., OF GERMANTOWN, PENN. England and Wales, Returns of Owners of Land, 1873. 2 vols., 4to.

NORTHEY, W. The Spectator, 49 numbers.

OLIVER, S. C. Fifth Annual Report of Railroad and Warehouse Commission of Ills., 1875. 1 vol., 8vo. Report of Supt. of Public Instruction of Cal., 1874–75. 1 vol., 8vo. Prisons and Penitentiaries, 1876. 1 vol., 8vo. Miscellaneous pamphlets, 85.

OURT, ANDREW J., OF HARRISBURG, PENN. Report of the Board of Public Charities of Penn., 1875. 1 vol., 8vo.

PALFRAY, C. W. Every Saturday. 67 numbers. Miscellaneous pamphlets, 51.

PERKINS, SAM'L C., OF PHILADELPHIA, PENN. Miscellaneous pamphlets, 3.

PHIPPEN, GEO. D. Public Documents and Directories, 23 vols. 8vo.

PUTNAM, MRS. EBEN. Miscellaneous books, 69 vols. Pamphlets, 735.

PUTNAM, F. W. New York Tribune, June, July, Aug., 1876. Miscellaneous papers, 13.

QUINCY, EDMUND. Speeches delivered in the Congress of the U. S. by Josiah Quincy, 1805–1813. 1 vol., 8vo.

ROBINSON, JOHN. Miscellaneous pamphlets, 73.

SEWALL, C. C., OF MEDFIELD, MASS. Bi-Centennial of the Burning of Medfield, 1676, 1876. 8vo.

SPOFFORD, A. R., OF WASHINGTON, D. C. Catalogue of Books added to the Library of Congress, 1873–75. 1 vol., 8vo.

STICKNEY, M. A. Miscellaneous College pamphlets, 8.

STONE, B. W. Boston Directory, 1833. 1 vol., 8vo. Exeter and New Market, 1873. 1 vol., 8vo.

TROWBRIDGE, THOMAS R., OF NEW HAVEN, CONN. Genealogy of the Trowbridge Family. 1 vol., 8vo.

UNKNOWN. The New Century for May, June, July, Aug., Sept., Oct., 1876.

U. S. DEPARTMENT OF STATE. Reports upon the Vienna Exposition in 1873. 4 vols., 8vo.

U. S. ENGINEER DEPARTMENT. U. S. Geological Survey, Zoology, Vol. V. 1 vol. 4to.

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Mrs. Grace A. Ellis, of Swampscott, was elected a resident member.

Mr. David Pingree having declined the office of Treasurer, Mr. Henry M. Brooks was unanimously elected to the office.

Mr. Caleb Cook presented, in behalf of Mr. J. H. Lefavor, a series of twenty photographs of Salem and vicinity.

Mr. Alfred Peabody presented, in behalf of Mr. A. S. Peabody, specimens of fishes from Cape of Good Hope.

Mr. T. F. Hunt offered the following:

Whereas, it is understood that the Old South Preservation Committee, of Boston, propose holding an Exhibition of Historical Relics for the benefit of the Old South Fund; and *whereas*, the Essex Institute wishes to avoid any action which might conflict with such exhibit; it is

Voted, That the Exhibition of Historical Relics proposed to be holden by the Institute the coming winter be postponed to another season, and the Secretary be instructed to present the thanks of the Institute to Col. F. M. Etting, of Philadelphia, for his kind offer to loan a collection of valuable relics, and inform him of the reason for postponement.

Vice President A. C. Goodell offered the following:

Whereas, The Essex Institute has witnessed, with admiration, the labors of those citizens of Philadelphia who have joined in collecting for exhibition during the progress of the International Exhibition, such historical relics and documents as would tend to excite patriotism, and more strikingly illustrate the progress of our country from the earliest colonial period, be it

Resolved, That the Institute express to Col. F. M. Etting and Charles Henry Hart, Esq., and to those ladies and gentlemen who were associated with them, its high appreciation of the courage with which they undertook, and the discretion, energy and perseverance with which they have conducted the truly National Exhibition at Independence Hall, and in the Academy of Fine Arts in Philadelphia during the past summer.

Resolved, That the Secretary be instructed to present a copy of the foregoing preamble and resolutions to Col. Etting and Mr. Hart, with the request that they will communicate the same to their associates in such manner as they shall find most convenient.

◆

REGULAR MEETING, MONDAY, NOVEMBER 20, 1876.

MEETING this evening. The PRESIDENT in the chair. Records of preceding meeting read.

The subject of lectures the coming season was fully discussed, and a programme was presented by the lecture committee.

Mr. H. H. Edes of Charlestown, was elected a resident member.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 8. SALEM, MASS., DEC., 1876. NOS. 9-12.

REGULAR MEETING, MONDAY, DECEMBER 4, 1876.

MEETING this evening. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From J. A. Allen, Cambridge, Nov.; Belfast Naturalist Field Club, Sept. 7; Charles A. Bemis, Marlborough, N. H., Aug. 3; George B. Blodgette, Rowley, Nov. 20; S. L. Boardman, Augusta, Me., Nov. 17, 27; Henry Breed, Lynn, Nov. 18; Cherbourg, Société Nationale des Sciences Naturelles, Oct. 13; C. Cushing, Boston, Nov. 16; C. W. Eaton, Wakefield, Nov. 27, Dec. 2; Charles Wyllys Elliott, Cambridge, Nov. 1; Grace A. Ellis, Boston, Nov. 18; Emden, Naturforschende Gesellschaft, Sept. 1; Frank M. Etting, Philadelphia, Nov. 20; A. W. Foote, Boston, Nov. 9; A. C. Goodell, Jr., Nov. 25; A. F. Gray, Danversport, Nov. 18; Kjobenhavn, Det K. Danske videnskabernes Selskab, Oct. 17; F. LeBaron, Boston, Nov. 18; J. D. Miller, Cross River, N. Y., Nov. 14; W. S. Nevins, Nov. 22; S. C. Oliver, Philadelphia, Nov. 21; Page Belting Co., Concord, N. H., Nov. 17; J. S. Pierson, New York, Nov. 15, 17, 23, 24; H. Reed, Philadelphia, Nov. 11, 15; Abby S. Richardson, Boston, Nov 18; T. S. Roberts, Minneapolis, Nov. 16; C. Saltonstall, Nov. 25; Smithsonian Institution, July 26; U. S. Bureau of Education, Nov. 10; J. A. Vinton, Winchester, Nov. 24; Zurich, Naturforschende Gesellschaft, Aug.

Dean Dudley of Wakefield, was elected a corresponding member.

Vice President F. W. PUTNAM presented to the society, in behalf of the author, a work by Dr. GEORGE A. OTIS, U. S. Army, containing a list of the human crania and skeletons now in the collection of the Army Medical Museum at Washington. Mr. Putnam said that this work was very complete in the measurements given, and was a valuable addition to the library as a work of reference.

Mr. PUTNAM read a communication on the

BIRDS OF NORTH-EASTERN ILLINOIS.

BY E. W. NELSON.

THE region about the southern end of Lake Michigan, in Illinois, presents an unusually fertile field for the ornithologist. Situated, as it is, midway between the wooded region of the East and the treeless plains of the West, with the warm river bottoms of the South, rich in southern species, extending within a comparatively short distance, and the Great Lakes upon the north, North-eastern Illinois forms a kind of "four corners" where the avian-faunæ of four regions intergrade. To the proximity of Lake Michigan we are indebted for a number of more or less strictly maritime species, among the most important of which are, during summer, *Ammodromus caudacutus*, *Ægialitis melodus* and *Anas obscura*, and, during the migrations, *Strepsilas interpres*, *Tringa bonapartei*, *T. maritima*, *T. canuta*, *Calidris arenaria*, with all the common water birds, with very few exceptions, found upon the coast at that season. In winter the list is larger, during which season are found *Histrionicus torquatus*, *Harelda glacialis*, the three species of *Œdemia*, *Somateria mollissima*, *S. spectabilis*, *Stercorarius pomatorhinus*, *Larus glaucus*, *L. leucopterus*, *L. marinus*, and *Rissa tridactyla*.

As would be expected, the southern species occur only in summer, with the exception of *Lophophanes bicolor*, which is found only in winter. The principal southern species are: *Mimus polyglottus*, *Parus carolinensis*, *Thryothorus ludovicianus*, *T. bewicki*, *Protonotaria citrea*, *Dendrœca* var. *albilora*, *D. cærulea*, *Oporornis formosus*, *Icteria virens*, *Myiodioctes mitratus*, *Pyranga æstiva*, *Collurio* var. *ludoviciana*, *Cardinalis virginianus*, *Centurus carolinus*, *Nauclerus forficatus*, *Rhynogryphus aura*, *Tantalus loculator*, *Gallinula martinica*, *Porzana jamaicensis*, *Sterna regia* and *S. antillarum*.

We have also, either as residents or transient visitants, the following western species: *Myiadestes townsendi*, *Vireo belli* (breeds), *Hes-*

periphona vespertina, Plectrophanes pictus, Ammodromus lecontei, Zonotrichia var. *intermedia, Z. coronata, Z. querulea, Spizella pallida* (breeds), *Eremophila* var. *leucolæma* (breeds), *Sturnella* var. *neglecta* (breeds), *Scolecophagus cyanocephalus, Pica* var. *hudsonica, Chordiles* var. *henryi* (breeds), *Buteo* var. *calurus* (breeds?), *B. swainsoni* (breeds?), *Tringa bairdii, Steganopus wilsoni* (breeds), and numerous others less strictly western.

A belt about twenty-five miles wide, bordering Lake Michigan in Illinois, will include the field of the present paper. A few species taken during the migrations at Racine, Wisconsin, have been added. Although this locality is not situated within the precise limits of the region to which this paper is limited, it being, however, but a few miles north of the Illinois state line, upon the Lake shore and in the direct line of migration, it would seem extremely improbable that a northward bound species taken at Racine should not have passed through the adjacent portion of Illinois.

Not only is the influence of the Lake upon the fauna shown by the occurrence of numerous species of birds, attracted by the presence of a large body of water with its congenial surroundings, but the influence of the Lake upon the climate and the vegetation in its immediate vicinity, has a marked influence upon the list of summer residents.

As is well known, the country bordering upon the Great Lakes possesses an average lower temperature during summer, and a higher temperature during the winter, than the surrounding districts. This has a decided effect upon the movements and distribution of the birds in the vicinity of these large bodies of water.

This influence is seen in a retardation, often of a week or more, in the spring migration, and in the scarcity of small woodland species during the breeding season. Although birds are exceedingly numerous here during the migrations, and the number of species found during the summer compares favorably with the number found at the same season in other localities having the same latitude, they are represented by decidedly few individuals. This fact is especially noticeable after one has passed a day in the marshes of the vicinity, where the abundance of numerous marsh and water birds, both in species and individuals, would lead one to suppose the woods were equally favored.

The limits of the field discussed in this paper embrace two counties, Cook County upon the south, and Lake County upon the north. Each possesses certain topographical peculiarities. Cook County is mainly prairie land, interspersed with ridges and groves of timber, the former of which generally extend parallel to the Lake shore. Near the south-eastern portion of the county the surface of the prairie is but slightly above the level of the lake. Through this county flows the

Calumet river, along which are extensive marshes, which form a favorite haunt for various waterfowl. Along the Lake shore, in northwestern Indiana, extending thence slightly into Illinois, is the Pinery, a peculiar, sandy, barren tract of land partly covered by a sparse growth of pines and deciduous underbrush, with, near the Lake, patches of juniper. Lake County has much more woodland, and is more hilly or rolling than Cook County. Extending along the Lake shore, from the northern border of the state nearly the entire length of this county, is a tract quite similar to the Pinery before described, except that here the sand-hills near the Lake are nearly covered with the junipers (*Juniperus communis*). Throughout this county are scattered a large number of small lakes, many of which have a marshy border and are much frequented by waterfowls, both during the migrations and the breeding season.

The woods near Lake Michigan, in both these counties, are upon ridges extending parallel to the Lake shore, which are separated by belts of prairie. These ridges form convenient highways for the woodland species during the migrations. The water birds either follow the Lake shore or the river courses. The migrations of the latter are almost directly north and south, but with the woodland species it is quite different. They follow the heavily wooded river bottoms from the south, and approach the sparsely wooded states along the upper Mississippi in immense numbers, where they swerve toward the heavily wooded region of the northern Lake region, where they find extensive breeding grounds. This change in the direction of their migration causes them to move diagonally across the northern half of Illinois toward the north-east. To this we are indebted for the vast numbers of migrants found along the Lake in this vicinity. Weary from their flight up the Mississippi and Illinois rivers, they halt along the inviting ridges bordering the Lake. After a short rest they resume their northward way, striking boldly across the Lake towards their summer homes in northern Michigan and beyond. I have many times stood upon a wooded bluff on the Lake shore and seen flock after flock of warblers and other small birds pass out of sight over the Lake.

The fall migration is less uniform, the birds straggling along in such a manner that it is difficult to trace any movement except a general inclination to the south. A severe storm upon the Lake during the spring migration works sad havoc among the birds, for when a fog arises they become bewildered and perish by thousands, and large numbers are washed ashore. An instance of this kind occurred the last of May, 1876, when I counted over two hundred birds, representing over fifty species, in walking about a mile along the Lake shore.

For many valuable notes included in the present paper I am indebted to Dr. P. R. Hoy, of Racine, Wisconsin; to Dr. H. B. Bannister, of Evanston; to Mr. C. N. Holden, Jr., of Chicago; to Mr. F. T. Jencks, of Providence, R. I., who was my companion in the field during the spring of 1876, and who added materially to my notes; and especially to Mr. F. L. Rice of Evanston, who placed at my disposal notes extending over several years. I am also indebted to Messrs. T. H. and C. W. Douglas, of Waukegan, and to others for valuable notes, which are duly acknowledged in the following pages. My own observations have been continued through the last three years, and have been made in various localities in the two above named counties. The dates of the migrations and nesting given indicate the average of observations continued through several years.

Family **TURDIDÆ.**

Genus **Turdus** *Linn.*

1. **T. mustelinus** *Gmel.* WOOD THRUSH. Common summer resident in suitable places. Arrives first of May; nests the last of the month and leaves September first.

2. **T. fuscescens** *Steph.* WILSON'S THRUSH. Rather rare summer resident. Arrives in small numbers the second week of May and departs the first of September.

3. **T. aliciæ** *Bd.* ALICE'S THRUSH. Very abundant migrant; frequenting open woods and the borders of adjacent fields. May 1st to 20th; September 1st to October 5th. I have rarely heard this species sing except during damp, gloomy days in spring, when trees and bushes were dripping with a fine misty rain. On such occasions, I have often been greeted by the clear metallic notes of this thrush rising clear and strong, filling the air with a sweet, indescribable melody, and then dying away in measured cadence until the last notes are scarcely distinguishable. As the first strain ends the song is reechoed by hidden musicians on every hand, until every tree seemed to give forth the weird music.

4. **T. swainsoni** *Caban.* SWAINSON'S THRUSH. Abundant migrant and a very rare summer resident. Arrives in spring a few days later than the preceding, and at about the same time in fall. I obtained a specimen near Chicago, June 7th, 1873, and July 9th, the same year, Mr. Rice obtained a second specimen. The song of this species is similar, but much less musical, than that of the preceding.

5. **T. pallasii** *Caban.* HERMIT THRUSH. Very abundant migrant. April 1st to May 10th, and September 20th to October 31st. Several years since, during the fall migration, one of these birds was brought to me alive, it having entered a neighbor's house in Chicago, through an open window in which were some very large plants. This,

with the two preceding species, frequent vacant lots and grounds containing shrubbery in Chicago, in large numbers during the migrations.

6. **T. migratorius** *Linn.* Robin. Common summer resident. Arrives March 1st in large flocks. The resident birds commence nesting April 15th, and all leave during October and the first part of November.

Genus **Harporhynchus** *Cab.*

7. **H. rufus** *Linn.* Brown Thrush. Common summer resident. Arrives April 20th, nests the middle of May, and departs in September. That the nest of this species is often placed in trees and bushes for protection against some apparent danger I have no doubt, but in many cases this site is chosen from a mere whim of the bird. I have found in one "scrub oak" grove, on a sandy ridge, some half dozen nests for several seasons in succession, and each year about one-half the nests were in the trees, and the remainder were built at the bases of saplings or bushes, yet I could find no apparent cause for the location of the nests in the trees. The young were in each case reared with equal safety.

Genus **Mimus** *Boie.*

8. **M. polyglottus** *L.* Mocking Bird. A very rare summer resident. I know of but few instances of its occurrence in the vicinity of Chicago. Dr. Hoy has recorded six nests obtained in the vicinity of Racine, Wisconsin.

Genus **Galeoscoptes** *Caban.*

9. **G. carolinensis** *L.* Cat Bird. Very common summer resident. Arrives May 1st; nests the middle of this month and departs during September.

Genus **Myiadestes** *Cab.*

10. **M. townsendi** *Aud.* Townsend's Thrush. A single specimen of this species was obtained December 16, 1875, by Mr. Charles Douglas, at Waukegan. The bird was found in a sheltered ravine, extending a short distance into the bluff, bordering the lake shore near the above named place, and showed no alarm when approached. Nothing peculiar was observed concerning its habits except that its movements were very sprightly.

Family **SAXICOLIDÆ.**

Genus **Sialia** *Sw.*

11. **S. sialis** *Bd.* Blue Bird. Arrives early in March and is abundant, in flocks, until the first of May, when they commence

breeding. The fall migration extends from September 12th to October 25th. Under the date of October 1st, 1876, my friend Mr. N. S. Davis, jr., of Evanston, writes that within a few days he has observed several Blue Birds eating the berries of the wild ivy (*Ampelopsis quinquefolia*), growing near that place.

NOTE.—*S. arctica.* Dr. Hoy informs me that he has seen a specimen of this species, in a collection at Dubuque, Iowa, which was taken, late in the fall, upon the east side of the Mississippi River near that town.

Family **SYLVIIDÆ.**

Genus **Regulus** *Cuv.*

12. **R. satrapa** *Licht.* GOLDEN-CROWNED KINGLET. Abundant migrant. April 1st to May 10th, and October 1st to 31st.

13. **R. calendula** *Licht.* RUBY-CROWNED KINGLET. Like the preceding, abundant during the migrations, and found everywhere in woods. Several days behind the other species in the spring and in advance in the fall.

Genus **Polioptila** *Sclat.*

14. **P. cærulea** *Sclat.* BLUE-GRAY GNATCATCHER. Common migrant. April 27th to May 20th, and August 25th to September 10th. Owing to a lack of heavy timber, few remain to breed.

Family **PARIDÆ.**

Genus **Lophophanes** *Kaup.*

15. **L. bicolor** *Bonap.* TUFTED TITMOUSE. Occurs only during fall and winter, when straggling parties occasionally visit us from Southern Illinois, where it is one of the characteristic species.

Genus **Parus** *Linn.*

16. **P. atricapillus** *Linn.* BLACK-CAPPED TITMOUSE. Resident. More numerous during the migrations and in winter.

17. **P. carolinensis** *Aud.* CAROLINA TITMOUSE. A rare summer visitant to the "Pinery," at the southern end of Lake Michigan.

18. **P. hudsonicus** *Forst.* HUDSON'S BAY TITMOUSE. A very rare winter visitant. Dr. Hoy observed a small flock near Racine in January, 1852; and Dr. Velie has since observed them at Rock Island, Illinois.

Genus **Sitta** *Linn.*

19. **S. carolinensis** *Lath.* WHITE-BELLIED NUTHATCH. Common resident. More abundant during the migrations. Near Wauke-

gan, May 10th, 1876, a pair of these birds were observed carrying material for a nest, into a knot-hole in a large oak, about twenty-five feet from the ground. The hole was large enough to admit my hand, and several inches deep, but filled to within two inches of the top by the remains of an old squirrel's nest. The birds worked steadily for about a week, lining the cavity with small fragments of dry leaves and pieces of rabbits' fur. Just as the nest was finished a pair of flying squirrels took possession of the premises and the birds sought another location.

20. S. canadensis *Linn.* RED-BELLIED NUTHATCH. Rather more numerous early in the migrations than the preceding. April 1st to May 10th, and August 25th to October 30th. A rare summer resident. I found a pair near Chicago with full grown young the first of July, and Mr. Rice observed a pair feeding unfledged young the last of April, 1874, at Evanston. The excavation containing this nest was in a tree, standing on one of the principal streets of the town. It was about twenty feet from the ground. The young were thrusting their heads out of the hole and clamoring for food, thus attracting his attention when they would otherwise have been unnoticed.

Family CERTHIIDÆ.

Genus Certhia *Linn.*

21. C. familiaris var. **americana** *Bonap.* BROWN CREEPER. Common winter resident, arriving October 1st and remaining until May 10th. Particularly abundant the first two weeks of October and of April, when they frequent the streets of Chicago in large numbers, industriously searching the rough brick walls for the small spiders which they find in abundance in the numerous crevices. I have seen as many as a dozen of these birds upon the side of a house at once, moving from place to place as readily as though on the trunk of a tree.

Family TROGLODYTIDÆ.

Genus Thryothorus *Vieill.*

22. T. ludovicianus *Bonap.* GREAT CAROLINA WREN. A rare summer visitant. Abundant in Southern Illinois.

23. T. bewicki *Bonap.* BEWICK'S WREN. Rare summer resident. A pair of these birds appeared in a vacant lot in Chicago the first of June, 1876, and taking possession of a convenient corner in the roof of an arbor. proceeded to raise their young. At intervals through the day the male would mount to the top of some house, or the topmost twig of a tree in the vicinity, and sing for an hour or more. The family suddenly left about the middle of July.

Genus **Troglodytes** *Vieill.*

24. T. aëdon *Vieill.* HOUSE WREN. Rather common summer resident away from the immediate vicinity of the Lake. Arrives the first of May and departs the last of September.

25. T. parvulus var. **hyemalis** *Vieill.* WINTER WREN. A common migrant. April 5th to May 1st, and September 12th to October 20th. I have found this species much more musical during the fall migration than in the spring.

Genus **Cistothorus** *Caban.*

26. C. stellaris *Caban.* SHORT-BILLED MARSH WREN. Rather common summer resident and generally distributed in suitable places. Breeds last of May. I think the distribution of this species is much more general than is supposed. Owing to the character of the locality in which they are found, and to their shyness, the chances are that they will be overlooked. Before I learned their habits I passed repeatedly through places where I afterwards found they were quite common.

27. C. palustris *Bd.* LONG-BILLED MARSH WREN. Abundant summer resident in marshy localities. Arrives the first of May, nests the last of this month to the first of August. I have seen hundreds of the nests of this species but have yet to see one attached to a bush in the manner described in Baird, Brewer and Ridgway's "North American Birds" (Vol. I, p. 162). The nests I have seen have almost invariably been placed in the midst of tall bulrushes, or wild rice, growing upon a more or less submerged marsh, and are supported about two feet above the surface, by being firmly attached to several of the surrounding stalks, something in the manner of the attachment of the Red-winged Blackbird's nest. The structure of the nests agrees with the description in the above named work, with the exception of mud never being used in nests I have examined. While the female is incubating, the male is almost constantly employed upon the construction of several unfinished nests, until often a pair may boast the possession of a dozen unoccupied tenements. The supernumerary nests are less substantial structures than the one occupied, and are built indifferently of the living or dead grass leaves, the latter being almost exclusively used in the structure occupied.

Family **MOTACILLIDÆ.**

Genus **Anthus** *Bechst.*

28. A. ludovicianus *Licht.* TITLARK. Common in flocks along the Lake shore and on bare prairies during the migrations. Arrives about the 15th of May. It is then just assuming the breeding dress, and remains until about the 30th, when, its moult being completed, it moves north. Returns in October.

Family SYLVICOLIDÆ.

Genus **Mniotilta** *Vieill.*

29. **M. varia** *Vieill.* BLACK AND WHITE CREEPER. Not an uncommon summer resident. Abundant in the migrations; April 25th to May 15th, and August 20th to October 10th.

Genus **Protonotaria** *Bd.*

30. **P. citrea** *Bd.* PROTHONOTARY WARBLER. A rare summer visitant. Two specimens were taken during the summer of 1875, and I have heard of several other instances of its occurrence. All the specimens taken in this vicinity have remarkably dull colored plumage.

Genus **Helmitherus** *Raf.*

31. **H. vermivorus** *Bonap.* WORM-EATING WARBLER. Very rare visitant. A single specimen observed May 21st, 1876, at Waukegan.

Genus **Helminthophaga** *Caban.*

32. **H. chrysoptera** *Caban.* GOLDEN-WINGED WARBLER. Comparatively rare. It breeds rarely. Migrates May 15th to 25th, and September 1st to 20th.

33. **H. ruficapilla** *Bd.* NASHVILLE WARBLER. A rare summer resident. Very common during migrations; May 10th to 24th, and September 5th to 30th, and perhaps later.

34. **H. celata** *Bd.* ORANGE-CROWNED WARBLER. A common migrant; April 27th to May 20th, and September 15th to October 25th. Frequents bushy hillsides and borders of woods.

35. **H. peregrina** *Caban.* TENNESSEE WARBLER. Nearly equal to the preceding in numbers, but more difficult to procure during the spring migration, owing to its frequenting the tops of the trees and moving quickly from place to place. Like several other species of warblers which frequent the tops of the trees in spring, it is found much lower in fall, when it may be easily obtained. I have found this true of adults and young of the year. Migrates May 15th to 25th, and August 25th to October 10th.

Genus **Parula** *Bonap.*

36. **P. americana** *Bonap.* BLUE-YELLOW-BACKED WARBLER. An abundant migrant from May 8th to 25th, and August 25th to September 20th. Breeds rarely.

Genus **Perissoglossa** *Bd.*

37. P. tigrina *Bd.* CAPE MAY WARBLER. Very common migrant. May 7th to 25th, and September 5th to 20th. In spring, found almost exclusively in the tops of the trees; in autumn found in large numbers along roadsides, borders of woods and fields in company with *Dendrœca palmarum*, from which it is, with difficulty, distinguished at gunshot, so closely alike are their habits and movements at this season.

Genus **Dendrœca** *Gray.*

38. D. æstiva *Bd.* YELLOW WARBLER. Abundant summer resident. Arrives May first and departs the last of August and first of September.

39. D. coronata *Gray.* YELLOW-RUMPED WARBLER. An exceedingly abundant migrant; April 1st to May 24th, and September 20th to October 25th.

40. D. maculosa *Bd.* BLACK AND YELLOW WARBLER. Nearly as numerous in the migrations as the preceding. May 8th to 29th, and August 25th to October 10th.

41. D. cærulea *Bd.* CÆRULEAN WARBLER. A regular but rare migrant. May 12th to 20th, and the first of September. Prefers high woods. Very abundant in the southern half of the state. Rare summer resident here, but near Detroit, Michigan, I am informed it is one of the common species at this season.

42. D. blackburniæ *Bd.* BLACKBURNIAN WARBLER. Very abundant during the migrations. May 10th to June 3rd, September 7th to 25th. One of our commonest species during the migrations. The males arrive at least a week in advance of the females.

43. D. dominica var. **albilora** *Bd.* YELLOW-THROATED GRAY WARBLER. A very rare summer visitant from the south. Prof. D. S. Jordan of Indianapolis, Indiana, informs me that this species is a common summer resident in that vicinity, and I have trustworthy information of its rather common occurrence, in summer, in the vicinity of Detroit, Michigan.

44. D. pennsylvanica *Bd.* CHESTNUT-SIDED WARBLER. Abundant migrant; May 1st to 25th; September 1st to 20th. Breeds sparingly away from the Lake.

45. D. striata *Bd.* BLACK-POLL WARBLER. A common migrant; May 15th to 28th, and September 12th to October 1st.

46. D. castanea *Bd.* BAY-BREASTED WARBLER. Abundant migrant; May 8th to 25th. In autumn this species, with the preceding, is found in large numbers everywhere, except upon the open prairies.

47. D. cærulescens *Bd.* BLACK-THROATED BLUE WARBLER. A common migrant; May 12th to 25th, and September 10th to October 20th.

48. D. virens *Bd.* BLACK-THROATED GREEN WARBLER. Very common migrant; May 5th to 25th, September 20th to October 12th. A few remain to breed.

49. D. pinus *Bd.* PINE-CREEPING WARBLER. Common migrant; April 27th to May 20th, September 15th to October 5th. The first of July, 1874, I found a large number of these birds with young just old enough to follow their parents, in the "Pinery," and presume they nest there regularly.

50. D. palmarum *Bd.* YELLOW RED-POLL WARBLER. An abundant migrant; April 25th to May 20th, and September 10th to October 15th.

51. D. discolor *Bd.* PRAIRIE WARBLER. A very rare spring and summer visitant, perhaps breeding. But very few specimens have been taken in the vicinity of Chicago. Dr. Hoy writes that he knows of but one instance of its capture in Wisconsin.

Genus **Siurus** *Sw.*

52. S. aurocapillus *Sw.* GOLDEN-CROWNED WAGTAIL. An abundant migrant; from May 5th to 20th, September 15th to October 20th. Common resident in all suitable places.

53. S. noveboracensis *Nutt.* WATER WAGTAIL. An abundant migrant; April 1st to May 10th, and August 25th to October 25th. Found anywhere in damp woods or along the banks of streams during the migrations. A very few remain to breed in secluded woods.

54. S. ludovicianus *Bonap.* LARGE-BILLED WATER WAGTAIL. Not an uncommon summer resident, arriving May 8th to 15th, and leaving the first of September. Much more striking in its habits than the preceding, and prefers dark woods or dense willow patches in wet situations.

Genus **Oporornis** *Bd.*

55. O. agilis *Bd.* CONNECTICUT WARBLER. A rather common migrant; May 15th to 27th, and September first to October first. The species occurs in about equal numbers in spring and fall. Near Waukegan, the last of May, 1876, these birds were found frequenting a dense swampy thicket on the border of a wood, in company with *Geothlypis philadelphia* and two species of *Siurus*. They kept close to the ground and were quite difficult to shoot, as they would dart into the thicket upon the slightest alarm. Their habits in this locality were so nearly like those of *G. philadelphia*, that, until actually in hand, it was not an easy matter to distinguish them. While confined to the house by illness, the 26th and 27th of May, Mr. Jencks had the pleasure of becoming still better acquainted with their habits. His attention was first drawn to them by hearing a loud ringing song entirely new to him. Going to the door he saw the author of the song, upon one of the lower branches of a small pine tree close to the house. The specimen was soon in his possession and proved to be this species. Afterwards, during this and the following day, he heard the song repeatedly, and obtained other specimens of the bird. Their note he describes as being a trifle harsh, but pleasant to the ear. It is delivered with force, in a clear ringing manner, slightly resembling that of *G. trichas*. Their habits and movements while about the pine trees — within twenty yards of the house — closely resembled those of *S. aurocapillus*, with which they were associated.

56. **O. formosus** *Bd.* KENTUCKY WARBLER. A very rare summer visitant from Southern Illinois.

Genus **Geothlypis** *Caban.*

57. **G. trichas** *Caban.* MARYLAND YELLOW-THROAT. An abundant resident. Arrives May 8th; departs first of September. Breeds June first.

58. **G. philadelphia** *Bd.* MOURNING WARBLER. Not common. Migratory. Found in swampy thickets May 15th to 31st, and the first of September.

Genus **Icteria** *Vieill.*

59. **I. virens** *Bd.* YELLOW-BREASTED CHAT. A regular but not common summer resident. Arrives May 1st to 10th, and leaves the last of August. Nests in hazel thickets.

Genus **Myiodioctes** *Aud.*

60. **M. mitratus** *Aud.* HOODED WARBLER. A rare summer resident; arriving May 10th to 20th, and leaving early in autumn.

61. **M. pusillus** *Bonap.* GREEN BLACK-CAPPED WARBLER. A common migrant; May 7th to 25th, and the first of September. Found along the borders of woods and about willow patches.

62. **M. canadensis** *Aud.* CANADA WARBLER. A common migrant; May 15th to 29th, and the first of September. Rare summer resident.

Genus **Setophaga** *Swains.*

63. **S. ruticilla** *Swains.* REDSTART. An abundant migrant; May 10th to 25th, and in September. Also a Common summer resident in damp woods.

Family **HIRUNDINIDÆ.**

Genus **Progne** *Boie.*

64. **P. subis** *Bd.* PURPLE MARTIN. A very common summer

resident in towns. Arrives April 10th to 30th; departs the first of September.

Genus **Petrochelidon** *Caban.*

65. P. lunifrons *Bd.* CLIFF SWALLOW. An abundant migrant; May 1st to 10th, and the first of September. Also a common summer resident.

Genus **Hirundo** *Linn.*

66. H. horreorum *Bart.* BARN SWALLOW. A very common summer resident; arrives April 15th to May 10th; departs the first of September.

67. H. bicolor *Vieill.* WHITE-BELLIED SWALLOW. Common resident. Arrives in large numbers March 20th. The first of May only residents remain. Departs in September. This species still keeps its primitive habit of nesting in deserted woodpecker's holes, hollow stumps and similar places, generally close to some stream or body of water. Several times during the spring I have seen these birds occupy martin houses for several weeks until the owners returned, when, after a desperate battle they would leave. Have never observed them about the town during the breeding season.

Genus **Stelgidopteryx** *Bd.*

68. S. serripennis *Baird.* ROUGH-WINGED SWALLOW. A rare summer visitant, perhaps breeds.

Genus **Cotyle** *Boie.*

69. C. riparia *Boie.* BANK SWALLOW. Abundant summer resident. Arrives May 7th; departs September first. Nests in the sandhills and clay bluffs along the Lake shore.

Family **VIREONIDÆ.**

Genus **Vireo** *Vieill.*

70. V. olivaceus *Bonap.* RED-EYED VIREO. Common summer resident. Arrives May 15th and departs the last of September and first of October. I have found the irides, indifferently, red or brown, in spring specimens of this species.

71. V. philadelphicus *Cass.* PHILADELPHIA VIREO. A common migrant; May 15th to 25th, and September 5th to 25th. While passing in the spring these birds frequent either willow thickets or high woods. They were so numerous near Waukegan about the 20th of May, 1876, that a dozen specimens might have been obtained in an hour. The first of July, 1874, I found two pairs of these birds in a dense willow thicket bordering Mazon Creek, about sixty miles south of Chicago. Upon my approach the birds showed great anxiety, uttering a short complaining cry, and coming within a few feet of me. That they had young in the vicinity I was sure, but owing to the character of the covert they were not found. Specimens of this species may invariably—as far as my experience goes—be separated from those of *V. gilvus* by the greater intensity of yellow on the former, as well as by the quill characters.

72. V. gilvus *Cass.* WARBLING VIREO. A common summer resident. Arrives May 8th to 15th; departs in September.

73. V. solitarius *Bd.* BLUE-HEADED VIREO. An abundant migrant; May 5th to 25th, and the last of September and first of October. Found everywhere in the woods and thickets.

74. V. flavifrons *Bd.* YELLOW-THROATED VIREO. A common migrant and not uncommon summer resident. May 8th to 24th, and September 10th to October 15th.

75. V. noveboracensis *Bonap.* WHITE-EYED VIREO. Summer resident. Rather rare. Arrives the middle of May and departs the first of October. Very common in Southern Illinois.

76. V. belli *Aud.* BELL'S VIREO. A single specimen, obtained near Chicago, June 28, 1875, is the only instance I have recorded of its occurrence in this vicinity. It is a common summer resident on the more southern prairies of the state.

Family **AMPELIDÆ.**

Genus **Ampelis** *Linn.*

77. A. garrulus *Linn.* BOHEMIAN WAXWING. An irregular but occasionally abundant winter resident, especially along the lake. Arrives in December and sometimes remains until April. The winter of 1875-6 they were unusually numerous. In a letter dated March 16, 1876, Mr. Charles Douglas, of Waukegan, describes an "immense" flock of these birds which he observed the day previous, upon the lake shore near that town. The birds were feeding upon the juniper berries found there, and covered, according to Mr. Douglas's estimation, an area at least ten rods square. While feeding, those in the rear were continually flying and alighting in advance, thus keeping the flock moving so that it was difficult to overtake them. A few days later the flock separated into numerous smaller ones and soon departed for the north.

78. A. cedrorum *Scl.* CEDAR BIRD. Common summer resident. Arrives the last of February, breeds from the first of June until the middle of July; leave late in autumn.

Family LANIIDÆ.

Genus Collurio *Vigors.*

79. C. borealis *Bd.* GREAT NORTHERN SHRIKE. Regular winter resident. Arrives the last of October and generally departs the last of March. Sometimes they remain late in the season and may breed.

80. C. ludovicianus *var.* **ludovicianus** *Linn.* LOGGERHEAD SHRIKE. Common summer resident throughout the state. I have obtained its nest with a full set of eggs early in April, near Chicago. It generally arrives about the middle of March.

A small series of shrikes from the northern and southern extremes of the state have been submitted to my friend, Mr. J. A. Allen, who replies as follows: "They all belong decidedly to *var. ludovicianus*, though somewhat lighter than Florida specimens, with smaller bills, etc. There is a slight approach in some of them to *excubitoroides*, but the resemblance to Florida specimens is far greater than to specimens from the West — Wyoming, Utah, Colorado, etc." During the past two years I have examined a large number of shrikes from northern Illinois, and have found them, in nearly all cases, to be much nearer *ludovicianus* than *excubitoroides*. Specimens obtained in the Wabash Valley and other parts of Southern Illinois, exhibit the same characteristics in about equal proportion, as far as the number of specimens seen would permit me to judge.

80*a*. Var. excubitoroides also occurs throughout the state, especially upon the prairies, but is much less numerous than the eastern form. Their habits are identical.

Family TANAGRIDÆ.

Genus Pyranga.

81. P. rubra *Vieill.* SCARLET TANAGER. Common summer resident. Arrives May 8th and leaves early in autumn.

82. P. æstiva *Vieill.* SUMMER RED-BIRD. A rare summer visitant. I know of but few instances of its occurrence.

Family FRINGILLIDÆ.

Genus Hesperiphona *Bonap.*

83. H. vespertina *Bonap.* EVENING GROSBEAK. A winter visitant occurring at irregular intervals. The winter of 1871 they were quite common throughout the northern portion of the state. The following winter they were much rarer, and since then but very few have been seen. I am told that formerly, it was of much more regular occurrence.

Genus **Pinicola** *Vieill.*

84. P. enucleator *Cab.* PINE GROSBEAK. Formerly common; now a rare winter visitant.

Genus **Carpodacus** *Kaup.*

85. C. purpureus *Gray.* PURPLE FINCH. Common winter resident; a few breed. Arrives from the north in flocks the last of October, and remains until April.

Genus **Chrysomitris** *Boie.*

86. C. tristis *Bonap.* GOLDFINCH. Common resident. The winter dress is assumed the last of October and retained until the first of May.

87. C. pinus *Bonap.* PINE FINCH. A common winter resident associating with the preceding. Arrives the last of October and departs the last of May. Prof. Jordan informs me that he has taken a specimen near Indianapolis in midsummer.

Genus **Loxia** *Linn.*

88. L. curvirostra *var.* **americana** *Bd.* RED CROSSBILL. Formerly a common winter resident; now rare.

89. L. leucoptera *Gmel.* WHITE-WINGED CROSSBILL. Like the preceding, a winter resident of rare occurrence at present.

Genus **Ægiothus** *Caban.*

90. Æ. linarius *Caban.* LESSER RED-POLL. An abundant winter resident. Arrives in flocks the last of October, and remains until the last of March.

91. Æ. canescens *Caban.* MEALY RED-POLL. A rare winter visitant with the preceding.

Genus **Plectrophanes** *Meyer.*

92. P. nivalis *Meyer.* SNOW BUNTING. An abundant winter resident. Arrives in flocks the first of November and remains until about the middle of March. The 5th of March, 1875, I saw a flock of these birds in a tree in Chicago. The males were chanting a very low, and somewhat broken, but very pleasant song, bearing considerable resemblance to that of *Spizella monticola*. This and the following species, as well as other winter residents, appear a week or more earlier in the fall and depart later in spring, in the vicinity of the Lake than in other parts of the state in the same latitude.

93. P. lapponicus *Selby.* LAPLAND LONGSPUR. A very abundant winter resident in the prairie districts of the state. Arrives in straggling flocks from October 1st to 10th, and remains until the first of May. During the last of March and first of April, large straggling flocks pass north. An unusually large flight took place the 20th of March, 1873. A continuous series of large flocks occupied over two hours in passing. Those remaining after the middle of April are in breeding plumage.

94. P. pictus *Swains.* PAINTED LONGSPUR. Common migrant. March 30th, 1875, near Calumet Lake, I found a flock containing about seventy-five individuals of this species. Their habits were quite similar to those of *P. lapponicus* while upon the ground, except that while the latter species preferred the wet portions of the prairie, the former were found only about the higher portions. When flushed they invariably uttered a sharp clicking note, rapidly repeated several times. When driven from their feeding-place by my approach, they would rise, in a loose flock, and after wheeling about a few times start off in a direct line, gradually rising higher until they disappeared. After a short time their peculiar note would be heard, and darting down from a considerable height they would alight near the place from which they were driven. Although the flocks of *P. pictus* and *P. lapponicus* often became mingled while flying over the prairie, I did not see them alight together.

Genus **Pyrgita** *Cuvier.*

95. P. domestica *Cuv.* HOUSE SPARROW. Introduced into Chicago a few years since and has become very numerous throughout the city.

Genus **Passerculus** *Bonap.*

96. P. savanna *Bonap.* SAVANNA SPARROW. Plentiful during migrations, from April 1st to May 20th, and September 15th to October 25th. Not an uncommon summer resident.

Genus **Poocætes** *Bd.*

97. P. gramineus *Bd* GRASS FINCH. Abundant summer resident. Arrives March 25th to April 10th, and departs the last of September. Large numbers nest on the ground among the junipers and other low bushes along the Lake shore.

Genus **Ammodromus** *Sw.*

98. A. henslowi *Bonap.* HENSLOW'S BUNTING. Rather common summer resident upon the prairies. Arrives May 12th to 20th, and leaves the first of September. A very inconspicuous species that may be easily overlooked. Has a peculiar, weak, squeaky song, consisting of several short notes. Nests the last of May.

99. A. lecontei *Bonap.* LECONTE'S BUNTING. A rare migrant.

I obtained a fine specimen May 13th, 1875, at Riverdale, Illinois, and by my notes I see that a second specimen was observed the 21st of the same month near where the first was obtained. The specimen in my possession was flushed from a small depression in the prairie near the Calumet river, where the moisture had caused an early growth of coarse grass, about three inches in height. After darting off in an erratic course a few rods, it suddenly turned, and alighting ran rapidly through the grass, from which it was with difficulty started again and secured.

100. A. passerinus *Bonap.* YELLOW-WINGED SPARROW. One of our most abundant summer residents. Found everywhere in fields and on prairies, from the middle of May until first of September.

101. A. caudacutus *var.* **nelsoni** *Allen.* NELSON'S SHARP-TAILED FINCH. First obtained September 17th, 1874, in the Calumet Marsh, where it was abundant at the time. The 12th of June, 1875, I saw several of these birds in the dense grass bordering Calumet Lake, where they were undoubtedly breeding. The first of October, 1875, I again found them abundant on the Calumet Marsh, and also found them numerous in the wild rice bordering Grass Lake, Lake County, Illinois, the 10th of November the same year. Prof. S. A. Forbes has taken them on the Illinois River during the migrations, and Dr. Hoy has obtained a single specimen at Racine. From the numbers which visit us in fall, they must breed in abundance north of this state. They are difficult to obtain as they take refuge in the dense marsh grass upon the first alarm. Occasionally one mounts a tall reed and utters a short unmusical song, slightly resembling that of the Swamp Sparrow (*M. palustris*).

Genus **Chondestes** *Sw.*

102. C. grammaca *Bonap.* LARK FINCH. A common summer resident. Arrives the last of April or first of May, nesting the last of this month; departs August 25th to September 10th. Frequents barren fields and borders of prairies containing a sparse growth of small trees and rank weeds. Its nest is generally placed at the foot of some rank weed in a bare piece of ground. My observations regarding the song and general habits of the species, coincide with those of Mr. Ridgway as given in North American Birds (Vol. I, p. 564).

Genus **Zonotrichia** *Sw.*

103. Z. leucophrys *Sw.* WHITE-CROWNED SPARROW. Common migrant: March 20th to May 15th, and September 20th to October 25th. Frequents borders of cultivated fields and hedges.

103*a*. Var. intermedia *Ridg.* The 20th of April, 1871, a specimen of this form was obtained near Racine by Dr. Hoy. The specimen has been kindly loaned me for examination, and is without doubt a perfectly authentic example of this variety. The lores are almost white, considerably lighter than in average specimens of *intermedia.*

104. **Z. coronata** *Bd.* GOLDEN-CROWNED SPARROW. A beautiful male specimen of this species was obtained the middle of April, 1858, by Dr. Hoy in his garden at Racine. The specimen was first identified by Mr. Cassin. This specimen was loaned me with the preceding, and upon comparison I find it differs but very slightly from California specimens of the same species in my collection.

105. **Z. albicollis** *Bonap.* WHITE-THROATED SPARROW. Very abundant migrant, and rare summer resident. Migrates April 20th to May 25th, and September 20th to October 30th.

106. **Z. querula** *Gamb.* HARRIS'S FINCH. A very rare visitant. There is a specimen in Dr. Hoy's collection, taken at Racine, May, 1856.

Genus **Junco** *Wagl.*

107. **J. hyemalis** *Sclat.* SNOW BIRD. Found everywhere in town and country, in the greatest abundance during the migrations; March 15th to May 5th and September 15th to October 30th. A few remain during winter.

Genus **Spizella** *Bonap.*

108. **S. monticola** *Bd.* TREE SPARROW. Abundant winter resident about thickets and in marshes. Arrives the 15th of October and departs the 1st of April. The first of March they collect in large flocks and are very musical. Often a large portion of the flock will unite in song which, although it may be more than equalled later in the season, yet, coming as it does between winter and spring, and so touchingly plaintive, one involuntarily stops to listen with a peculiar feeling of pleasure.

109. **S. pusilla** *Bonap.* FIELD SPARROW. Common summer resident. Arrives April 15th to May 1st, and leaves the last of September. Nests in large numbers in low bushes along the lake shore.

110. **S. socialis** *Bonap.* CHIPPING SPARROW. A common, but not abundant, summer resident. Arrives the first of April and leaves during October. Mr. Rice has obtained a nest of this species placed in a bunch of grass upon the ground, and in May, 1873, I found a nest placed directly upon the ground at the foot of a coarse weed. In each case the nest contained eggs and the parents were seen.

111. **S. pallida** *Bonap.* CLAY-COLORED SPARROW. A rare summer resident about the borders of prairies. Specimens are in Mr. Holden's collection taken near Chicago.

Genus **Melospiza** *Bd.*

112. M. melodia *Bd.* Song Sparrow. A common summer resident, but, like the Chipping Sparrow, is far less numerous than in the Atlantic states in the same latitude. Arrives early in March, nests in May and departs in October.

113. M. lincolni *Bd.* Lincoln's Finch. Common during the migrations from May 8th to 20th and September 20th to October 15th. Have seen several specimens during the breeding season, and the last of May, 1875, as I was walking through a patch of weeds, a female started from a few feet in advance of me, while my attention was attracted in another direction, and ran off with half-spread wings. It was shot and showed unmistakable signs of incubation, but a protracted search failed to reveal the nest. Specimens were taken in July, 1875, near Waukegan, by Mr. Rice.

114. M. palustris *Bd.* Swamp Sparrow. An abundant summer resident, far outnumbering *M. melodia*, although to one who has not frequently visited its favorite marshes at all seasons, this would seem improbable. Arrives the last of March and departs the last of October.

Genus **Passerella** *Sw.*

115. P. iliaca *Sw.* Fox-colored Sparrow. Common in the migrations from March 15th to the 1st of May, and September 25th to November 12th. Frequents damp woods and thickets.

Genus **Euspiza** *Bonap.*

116. E. americana *Bonap.* Black-throated Bunting. A common, and in some localities an abundant, summer resident. Arrives the second week of May and nests during June. Departs during August. Shows a decided preference for orchards and fields grown up with tall weeds. In orchards the nests are generally built in the shoots growing about the base of the trees, and placed about six inches from the ground. In fields I have sometimes found them placed in a depression in the ground. The nests are occasionally visited by Cow-buntings, but whether the strange egg is incubated or not I have not learned.

Genus **Hedymeles** *Cab.*

117. H. ludovicianus *Sw.* Rose-breasted Grosbeak. Rather common summer resident. Arrives 8th to 20th of May, and leaves early in autumn.

Genus **Cyanospiza** *Bd.*

118. C. cyanea *Bd.* Indigo Bird. Common summer resident. Arrives May 8th to 20th in small flocks, and leaves the last of September and first of October.

Genus **Cardinalis** *Bonap.*

119. C. virginianus *Bonap.* CARDINAL GROSBEAK. A rare and irregular summer resident. Occasionally specimens remain until late in autumn.

Genus **Pipilo** *Vieill.*

120. P. erythrophthalmus *Vieill.* TOWHEE. Common summer resident. Arrives March 25th to April 15th; departs the last of October.[1]

Family **ALAUDIDÆ.**

Genus **Eremophila** *Boie.*

121. E. alpestris *Boie.* SHORE LARK. The history of this species in Illinois is somewhat complex. Two current and readily distinguishable varieties are found during the winter, one of which is also found in summer. Aware of their identity, yet wishing confirmation, I sent Mr. Ridgway specimens of the two. The winter resident he pronounced typical var. *alpestris*, and the permanently resident form var. *leucolæma* Cs.

121*a*. Var. **alpestris** arrives in large numbers with the Longspurs in October and disperses over the prairies, where its habits are essentially the same as those of *leucolæma*, with which it associates to a certain extent. During April it again unites with the Longspurs, and the last of the month departs for its more northern breeding grounds.

121*b*. Var. **leucolæma** *Cs.* is a permanent resident, found in equal numbers throughout the year. Sometimes the last of Feburary and regularly during March and April the first set of eggs are deposited, and early in May the fully fledged young commence to appear. After a short rest the female hands the guidance of the young over to the male and resumes her work on a second set of eggs. When the second brood are able to follow, the party wander wherever inclination leads through the fall and winter, until the breeding season again approaches, when they disband.

A remarkable characteristic of the young of *leucolæma* from Illinois is that they are exactly like the young of *alpestris*, although the young of the two varieties are, usually, even more distinct than the adults. So closely like the young of *alpestris* are they, that Mr. Ridgway had labelled young specimens from this vicinity, and from Southern Illinois, "*alpestris*," and supposed this to be the resident variety until he received the adults above mentioned.

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[1] Through Dr. Hoy I learn that two specimens of *P. arcticus* have been taken in Wisconsin, one near Milwaukee, where it is now preserved, and a second opposite Dubuque, Iowa. He has seen both specimens and is positive of their identity.

Family ICTERIDÆ.

Genus **Dolichonyx** *Sw.*

122. D. oryzivorus *Sw.* BOB-O-LINK. Abundant summer resident. Arrives the last of April and leaves the middle of August.

Genus **Molothrus** *Sw.*

123. M. pecoris *Sw.* COW BUNTING. Common summer resident. Arrives the last of March and leaves in October.

Genus **Agelæus** *Vieill.*

124. A. phœniceus *Vieill.* RED-WINGED BLACKBIRD. An excessively abundant summer resident. Arrives the middle of March and leaves late in fall. During October and part of November this species, in company with the Purple Graçkle, forage among cornfields during the day, and at night enter the large marshes to roost in myriads.

Genus **Xanthocephalus** *Bonap.*

125. X. icterocephalus *Bd.* YELLOW-HEADED BLACKBIRD. Very common summer resident in large marshes. Arrives the first of May. Commences nesting the last of this month. Owing to the restricted localities inhabited by this bird, it is very slightly known among farmers; even those living next the marshes generally think it an uncommon bird. My observations regarding the actions of the males during incubation do not agree with those of Dr. Coues (Birds of the North-west, p. 190). The only difference between the habits of male and female is the slightly additional shyness of the former. Their nests vary endlessly in size, from four to twelve inches in depth, although the latter size is rather uncommon.

Genus **Sturnella** *Vieill.*

126. S. magna *Sw.* MEADOW LARK. Abundant summer resident. Arrives the first of March and leaves the last of October. In mild winters a few are resident.

126*a*. S. magna var. **neglecta** *Aud.* WESTERN LARK. A regular but rather rare summer resident upon prairies. A more frequent visitant during the migrations. A fine specimen is in the collection of my friend Mr. A. W. Brayton, taken near Chicago the last of May, 1876. This form is probably a common summer resident upon the prairies in the western portion of the state.

Genus **Icterus** *Briss.*

127. I. spurius *Bonap.* ORCHARD ORIOLE. Rather common summer resident. Arrives May 12th, leaves early in autumn.

128. I. baltimore *Daud.* BALTIMORE ORIOLE. Common summer resident. Arrives May 8th and departs in September.

Genus **Scolecophagus** *Sw.*

129. S. ferrugineus *Sw.* RUSTY BLACKBIRD. Very common in spring and fall, from March 25th to May 1st, and from September until the middle of November. Frequents borders of streams and ponds in large numbers.

130. S. cyanocephalus *Cab.* BREWER'S BLACKBIRD. A very rare visitant in company with the preceding.

Genus **Quiscalus** *Vieill.*

131. Q. pupureus var. **æneus** *Ridg.* PURPLE GRAKLE. A common summer resident. Arrives the middle of March, and departs late in autumn.

Family **CORVIDÆ.**

Genus **Corvus** *Linn.*

132. C. corax var. **carnivorus** *Bartr.* RAVEN. Formerly a not uncommon resident; now occurs only in winter and is rare. Frequents the sand hills along the Lake shore from the last of October until spring. The first of November, 1875, I saw several specimens near Waukegan, where they were repeatedly seen flying along the Lake shore, and also eating the dead fish found there.

133. C. americanus *Aud.* CROW. Resident. This is far from an abundant species in Northern Illinois, at any season or locality. A small number breed in the low pines on the sand hills along the Lake shore, and in winter they unite in small flocks and move from place to place.

Genus **Pica** *Cuv.*

134. P. caudata var. **hudsonicus** *Bonap.* MAGPIE. "Not uncommon in winter." (Kennicott.) I have no record of its occurrence other than the above, and its capture many years since near Racine, Wisconsin, by Dr. Hoy.

Genus **Cyanura** *Sw.*

135. C. cristata *Sw.* BLUE JAY. Very common resident. Have taken its eggs the 25th of April. At a farm-house near Waukegan, where I passed the spring of 1876, these birds were protected, and in consequence were very familiar. Some six or eight nests were built in the small pine trees within a few yards of the house, one of which was composed almost entirely of fragments of cloth, strings, and other soft material found in the yard, scarcely a stick being used in the entire structure. Mr. Rice informs me that a few years since they nested abundantly in the shrubbery in Evanston, but within a few years they have resumed their primitive habits and nest in the woods away from the town.

Genus **Perisoreus** *Bonap.*

136. P. canadensis *Bonap.* Canada Jay. Before the pine forest extending along the Lake shore, in the nothern extreme of the state, was destroyed, this species was in all probability a regular winter visitant. Dr. Hoy obtained specimens near Racine in the winter of 1859.

Family **TYRANNIDÆ.**

Genus **Tyrannus** *Cuv.*

137. T. carolinensis *Bd.* King Bird. A common summer resident. Arrives the first of May and departs early in autumn. In the summer of 1875, Mr. Rice saw one of these birds plunge repeatedly into a stream in the manner of a Kingfisher. Shooting the specimen he found its stomach contained aquatic insects.

Genus **Myiarchus** *Cab.*

138. M. crinitus *Cab.* Great-crested Flycatcher. Rather common summer resident. Arrives the middle of May and departs in September.

Genus **Sayornis** *Bonap.*

139. S. fuscus *Bd.* Pewee. A common summer resident. Arrives the first of April and departs late in autumn.

140. S. sayus *Bd.* Say's Pewee. Two specimens of this species are registered in the catalogue of birds in the Museum of the Northwestern University, at Evanston, from "West Northfield, Illinois, collected by R. Kennicott." These specimens are not in the collection at present. Dr. Hoy has also taken it in Wisconsin.

Genus **Contopus** *Cab.*

141. C. borealis *Bd.* Olive-sided Flycatcher. Not an uncommon migrant, from May 15th to 25th, and the last of September and first of October. I have taken one specimen as late as June 2nd. It may breed.

142. C. virens *Cab.* Wood Pewee. A very common summer resident. Arrives the middle of May and leaves the last of September.

Genus **Empidonax** *Cab.*

143. E. pusillus var. **trailli** *Bd.* TRAILL'S FLYCATCHER. An uncommon summer resident. Arrives May 8th and departs in September.

144. E. minimus *Bd.* LEAST FLYCATCHER. Common summer resident. Arrives and departs with *E. trailli.*

145. E. acadicus *Bd.* ACADIAN FLYCATCHER. A rare summer resident. Arrives a little later than the preceding.

146. E. flaviventris *Bd.* YELLOW-BELLIED FLYCATCHER. A common migrant; May 15th to 25th, and September until the 1st of October. The first of July, 1873, I found them quite common in a dense swampy thicket in Northern Indiana, where they had probably nested.

Family **Alcedinidæ.**

Genus **Ceryle** *Boie.*

147. C. alcyon *Boie.* KINGFISHER. Common summer resident along streams and ponds. Arrives the last of March and departs the last of November.

Family **CAPRIMULGIDÆ.**

Genus **Chordeiles** *Sw.*

148. C. popetue *Bd.* NIGHT HAWK. A common summer resident. Arrives the 10th of May and departs in immense flights, often lasting several hours, the 1st of September.

148*a*. Var. **henryi** *Cass.* First obtained in this vicinity by Mr. Rice, near Waukegan, July, 1875. The spring of 1876, I found these birds breeding, with var. *popetue*, in considerable numbers among the sand hills on the Lake shore, near Waukegan. I should judge that the two forms existed in about equal numbers at that place. They are, however, less common in other localities I have visited. Among the specimens examined were individuals that exhibited a perfect intergradation of the two forms. Some specimens would have the white patch on the wings like those in typical *henryi*, while the tail was marked as in *popetue*, and vice versa. Other specimens showed a varying degree of white, on the wings and tail, between the two varieties. In none is the lightness of the back quite so prominent as in specimens from the western plains.

Genus **Antrostomus** *Gould.*

149. A. vociferus *Bonap.* WHIP-POOR-WILL. Common summer resident. Arrives the last of April and departs in September.

Family CYPSELIDÆ.

Genus Chætura *Steph.*

150. C. pelagica *Bd.* SWIFT. Common in summer. Arrives the first of May and departs the last of August and first of September.

Family TROCHILIDÆ.

Genus Trochilus *Linn.*

151. T. colubris *Linn.* RUBY-THROATED HUMMER. Common summer resident. Arrives May 10th to 18th and departs the last of September.

Family CUCULIDÆ.

Genus Coccygus *Vieill.*

152. C. americanus *Bonap.* YELLOW-BILLED CUCKOO. Rather common summer resident. Arrives the middle of May and departs the first of September.

153. C. erythrophthalmus *Bon.* BLACK-BILLED CUCKOO. Common in summer during the same time as the preceding. Arrives perhaps a few days earlier. The two species are of irregular distribution, and are not generally found together in the breeding season.

Family PICIDÆ.

Genus Picus *Linn.*

154. P. villosus *Linn.* HAIRY WOODPECKER. Resident. More abundant in winter. Rather uncommon in summer.

155. P. pubescens *Linn.* DOWNY WOODPECKER. Resident. Much more numerous at all seasons than the preceding.

Genus Picoides *Lac.*

156. P. arcticus *Gray.* BLACK-BACKED THREE-TOED WOODPECKER. Rare winter visitant. A specimen was shot from a telegraph pole, in Chicago, a few years since, by Dr. Velie. It is a common species in Northern Wisconsin, and before the pines along the Lake were destroyed was probably a regular winter visitant to this state.

Genus Sphyropicus *Bd.*

157. S. varius *Bd.* YELLOW-BELLIED WOODPECKER. Very common in the migrations from March 25th to the middle of May, and the middle of September to October 10th. Males in spring often have the white nuchal band tipped with red much as in var. *nuchalis.* In the collection of Mr. C. N. Holden is a fine specimen obtained at Chicago, which has the red extending over the head and neck much like the distribution of color in *S. ruber*, but of a much lighter shade.

Genus **Hylotomus** *Baird.*

158. H. pileatus *Bd.* Pileated Woodpecker. A rare winter visitant. Two specimens were taken near Chicago during the winter of 1873.

Genus **Centurus** *Sw.*

159. C. carolinus *Bon.* Red-bellied Woodpecker. A rare summer resident. Not very uncommon during the migrations. Departs the last of October.

Genus **Melanerpes** *Sw.*

160. M. erythrocephalus *Sw.* Red-headed Woodpecker. The majority of these birds move south the last of September and first of October, returning the last of April. A few, generally young of the year, remain through the winter.

Genus **Colaptes** *Sw.*

161. C. auratus *Sw.* Yellow-shafted Woodpecker. Very common summer resident. Arrives the last of March and in April; departs by the first of October.

Family **PSITTACIDÆ.**

Genus **Conurus** *Kuhl.*

162. C. carolinensis *Kuhl.* Carolina Parrakeet. Formerly occurred. Specimens were taken in this vicinity by R. Kennicott many years ago, and Dr. H. M. Bannister informs me that he has seen it in this vicinity.

Family **STRIGIDÆ.**

Genus **Strix** *Linn.*

163. S. flammea var. **pratincola** *Bon.* Barn Owl. Very rare visitant. A pair were caught in a trap near Chicago some years since by Mr. C. H. Smith.

Genus **Otus** *Cuv.*

164. O. vulgaris var. **wilsonianus** *Less.* Long-eared Owl. Not uncommon. Resident. Remains concealed during the day in willow thickets and in similar situations.

165. O. brachyotus *Steph.* SHORT-EARED OWL. The most abundant species of the family. Arrives from the north in large numbers the first of November and disperses through the state. They are common everywhere, on prairies and marshes, during the winter. Remain concealed in a bunch of grass or reeds until about two o'clock, P.M., when they commence flying low over the ground in search of their prey. When approached, while standing on the ground, they crouch and try to escape observation much in the manner of the Burrowing Owl. They are very harmless and are easily tamed.

Genus **Syrnium** *Sav.*

166. S. cinereum *Aud.* GREAT GRAY OWL. A very rare winter visitant.

167. S. nebulosum *Gray.* BARRED OWL. Owing to the lack of heavy timber this is a rare species in this vicinity. Only two instances of its capture have come under my observation.

Genus **Nyctale** *Brehm.*

168. N. acadica *Bon.* ACADIAN OWL. Not an uncommon species. Is of frequent occurrence in Chicago, where, upon some of the most frequented streets in the resident portion of the town, over a dozen specimens have been taken within two years. Whether resident or not I have been unable to determine.

Genus **Scops** *Sav.*

169. S. asio *Bonap.* MOTTLED OWL. Rather common. Resident. Often strays into Chicago and becomes confused, when they may be captured alive, as has also been the case with several specimens of the preceding species.

Genus **Bubo** *Dum.*

170. B. virginianus *Bonap.* HORNED OWL. Not common. Resident. Formerly common.

170*a*. Var. **arcticus** *Sw.* A rare winter visitant. Have a fine specimen in my collection, taken the last of December, 1874.

171. Nyctea scandiaca var. **arctica** *Gray.* SNOWY OWL. Regular winter resident. More numerous in the vicinity of the Lake. Arrives in November and a few remain as late as the first of May.

Genus **Surnia** *Dum.*

172. S. ulula var. **hudsonica** (*Gmelin*). HAWK OWL. Rare winter resident. Dr. J. W. Velie tells me that he obtained a specimen in Kane County, Illinois, the first of September, 1869.

Family FALCONIDÆ.

Genus **Falco** *Auct.*

173. F. communis var. **anatum** *Bonap.* Duck Hawk. Not uncommon during the migrations. Formerly a rare summer resident.

174. F. lithofalco var. **columbarius** *Linn.* Pigeon Hawk. Abundant migrant, from March 20th to May 1st, and from September 15th to October 5th. Rare summer resident.

175. F. sparverius *Linn.* Sparrow Hawk. Abundant migrant and rather common summer resident. Arrives early in March and departs the last of September and first of October.

Genus **Pandion** *Sav.*

176. P. haliætus var. **carolinensis** (*Gmel.*). Fish Hawk. Not uncommon during March and April in spring, and during September and October in fall. Some seasons this species is quite numerous, especially along the Lake shore.

Genus **Nauclerus** *Vig.*

177. N. forficatus *Ridg.* Swallow-tailed Hawk. According to Kennicott (Ill. Agl. Rept., 1853-4) this beautiful species was once common in this vicinity, but was rare at the time he wrote. I can testify to its scarcity at present, only two or three instances of its occurrence within the last twenty years having been ascertained.

Dr. Hoy has noted *Ictinia mississippiensis* in Wisconsin, but I have no record of its occurrence in this vicinity, although it may yet be observed here.

Genus **Circus** *Lac.*

178. C. cyaneus var. **hudsonius** (*Linn.*). Marsh Hawk. Common in the marshes and on prairies during the migrations; March 25th to April 15th, and during October and November. Said to breed by Kennicott, but I have never seen a specimen here in the breeding season.

Genus **Nisus.**

179. N. fuscus *Kaup.* Sharp-shinned Hawk. Abundant during migrations; September 15th to October 30th, and April 15th to May 10th. A few remain to breed.

180. N. cooperi *Bonap.* Cooper's Hawk. Common summer resident. Arrives the last of April and departs the last of September or first of October.

Genus **Astur** *Lac.*

181. A. palumbarius var. **atricapillus** (*Wils.*). Goshawk.

Formerly a common winter resident; now very rare. Dr. A. L. Marcy, of Evanston, found them quite plentiful during the winter of 1870–71, and obtained specimens. The only time I ever saw the bird alive, was the 3rd of May, 1876, at Waukegan, when a fine adult specimen passed slowly overhead and disappeared toward the north.

Genus **Buteo** *Cuv.*

182. B pennsylvanicus (*Wils.*). BROAD-WINGED HAWK. Not uncommon the first of May and during September. A few breed.

183. B. swainsoni *Bonap.* SWAINSON'S HAWK. Of rather rare occurrence in this vicinity. Have only noted it during the migrations. I obtained an immature specimen May 30, 1875, at Riverdale, Ill., and have since seen others. As this species breeds in Southern Illinois it probably also breeds in the northern portions of the State.

184. B. lineatus *Gmel.* RED-SHOULDERED HAWK. Common during the migrations. Mr. R. Kennicott speaks of an immense flight of this species, consisting of thousands, which passed over Chicago, "in October, 1854." The main fall migration of hawks in this vicinity takes place the last of September or first of October, and a statement of the numbers which pass in a single day, to one who has not observed them, would be received with incredulity. Choosing a day when there is a strong south or south-west wind, the hawks commence moving south early in the morning and continue flying the entire day, and so numerously that, taking a stand at a good point, one would have from one to fifty hawks in view, with but very few intermissions, throughout the day. Among these occur all the migrants, but by far the greater number consist of the smaller species.

185. B. borealis var. **borealis** (*Gmel.*). RED-TAILED HAWK. The most common resident among the larger Raptores, and very numerous during the migrations.

185*a*. Var. **calurus** *Cass.* BLACK RED-TAIL. In my collection is a fine adult specimen of this variety obtained near Chicago in April, 1873, by my friend Mr. C. H. Smith.

Genus **Archibuteo** *Brehm.*

186. A. lagopus var. **sancti-johannis** (*Penn.*). Arrives in large numbers the first of October, and after remaining for a few weeks the majority pass further south for the winter. The last of February and first of March they depart for the north. Exceedingly shy except while migrating, and in consequence but few are shot. Mr. C. H. Smith captured alive a fine specimen in the black plumage, in the spring of 1874, and kept it until the early part of summer, when the hot weather caused its death.

For noble presence and piercing eye this bird has few equals among our Falconidæ. The specimen above mentioned bore a striking resemblance to a Golden Eagle.

Genus **Aquila** *Auct.*

187. A. chrysaetus var. **canadensis** *Linn.* GOLDEN EAGLE. Not very uncommon during winter. Arrives in November and departs early in spring. Formerly nested throughout the state. Dr. Hoy records the breeding of a pair of these birds in a tree near Racine in 1851 (Wis. Ag't Rept., 1852). In December, 1874, while hunting Prairie Chickens in a field a few miles south of Chicago, my friend, Mr. T. Morris, was suddenly attacked with great fury by a pair of these birds, they darting so close that had he been prepared he could easily have touched the first one with his gun. As it arose to renew the attack he fired a small charge of number six shot, and brought it down, dead. The second then darted at him, and so rapidly that he did not fire until it had turned and was soaring up, but so near that the charge passed through the primaries in a body, disabling but not injuring the bird, which was then captured alive. The cause of this attack was explained by the proximity of a carcass upon which these birds had been feeding. The craw of the dead eagle contained a large quantity of carrion, as I learned upon skinning it.

Genus **Haliætus** *Sav.*

188. H. leucocephalus (*Linn.*). BALD EAGLE. A common winter resident throughout the state, and breeds sparingly. Mr. T. H. Douglas writes me that a pair reared young in the vicinity of Waukegan, in 1873.

Family CATHARTIDÆ.

Genus **Rhinogryphus** *Ridg.*

189. R. aura (*Linn.*). TURKEY BUZZARD. A very irregular and rare visitant in this vicinity. Sixty miles south it is a common summer resident, yet I know of but very few instances of its occurrence here. A specimen was captured, after a snow storm, late in autumn, several years since at Waukegan, by Mr. Charles Douglas.

Family COLUMBIDÆ.

Genus **Ectopistes** *Sw.*

190. E. migratoria *Sw.* WILD PIGEON. Very abundant migrant; 15th of March to middle of April, and in October and November. Sometimes arrives in February. A few isolated pairs still breed in unfrequented woods.

Genus **Zenædura** *Bonap.*

191. Z. carolinensis *Bonap.* CAROLINA DOVE. A very common summer resident. The majority arrive the last of March and first of April, and depart by the middle of October. Straggling parties are occasionally observed during the winter. In many places this species becomes semi-domesticated, breeding in the trees in the yard and showing but little fear when approached.

Family **MELEAGRIDÆ.**

Genus **Meleagris.**

192. M. gallopavo *Linn.* WILD TURKEY. Formerly plentiful. No specimens have been observed for many years. Still abundant in Southern Illinois and in the bottom-lands along the rivers in Central Illinois.

Family **TETRAONIDÆ.**

Genus **Pediœcetes** *Bd.*

193. P. phasianellus var. **columbianus** (*Ord.*). SHARP-TAILED GROUSE. If this species now occurs it is extremely rare. Mr. Kennicott notes it as "not uncommon formerly." At present it is restricted to the north-western portion of the state. The last record of its occurrence in this vicinity is furnished by my friend Mr. T. H. Douglas, who informs me that in the fall of 1863 or 1864, while two gentlemen were shooting prairie chickens near Waukegan, they found and secured a covey of these birds, numbering fourteen individuals. These had, in all probability, been raised in the immediate vicinity.

Genus **Cupidonia** *Reich.*

194. C. cupido *Bd.* PRAIRIE CHICKEN. Once excessively abundant; now rather scarce within thirty miles of Chicago. Still exists in large numbers on the larger prairies, but is becoming much less numerous in all the more settled districts. In many places the farmers are in the habit of collecting their eggs by the pailful to use for culinary purposes. Such a drain as this, with the annual slaughter by sportsmen, and the restriction of their breeding grounds by cultivation, is rapidly lessening their numbers except in the remote prairie districts.

Genus **Bonasa** *Steph.*

195. B. umbellus *Steph.* RUFFED GROUSE. Common resident in the wooded portions. Farther north, in the forests of Wisconsin and Northern Michigan, it is very abundant and so unsophisticated that it may almost be captured with sticks.

Genus **Lagopus** *Vieill.*

196. L. albus *Aud.* WHITE PTARMIGAN. Kennicott gives this species as: "Sometimes found in the timber along Lake Michigan." This note was based, I think, upon the capture of two specimens, December, 1846, near Racine, as noted by Dr. Hoy. (Wis. Agr. Rep., 1852.)

Family **PERDICIDÆ.**

Genus **Ortyx** *Steph.*

197. O. virginianus *Bonap.* QUAIL. Still a common resident, although a recent severe winter greatly diminished their numbers. Exceedingly numerous in Southern Illinois.

Family **CHARADRIIDÆ.**

Genus **Squatarola** *Cuv.*

198. S. helvetica *Linn.* BLACK-BELLIED PLOVER. Not uncommon during the migrations. Arrives in full breeding plumage the last of May and after lingering a few days the majority pass north. A few remain during the summer and undoubtedly breed. Returning early in September in fall plumage, they remain until well into October. While with us in the migrations this species is generally solitary, sometimes a half dozen individuals joining company, or a single specimen will be found leading a miscellaneous company of sandpipers and small plovers.

Genus **Charadrius** *Linn.*

199. C. fulvus var. **virginicus** *Borck.* GOLDEN PLOVER. A very abundant migrant. Arrives in large flocks early in April, and at this time the black of the breeding plumage has just begun to mottle their white breasts. Frequents wet prairies until the last of the month, when it generally departs. Sometimes a few remain as late as May 5, and are then in perfect breeding dress. Returning early in September, with the fall plumage just appearing, it remains until into October.

Genus **Ægialitis** *Boie.*

200. Æ. vociferus (*Linn.*). KILLDEER PLOVER. Common summer resident. Arrives the first of March and departs in October. Stragglers sometimes appear in mid-winter, during a few warm days.

201. Æ. semipalmatus *Bonap.* SEMI-PALMATED PLOVER. Common during the migrations, generally in small flocks. In spring the migrations extend from April 25th to May 30th, and in fall from July

31st to the last of October. The 2nd of July, 1873, I obtained several specimens of this species near Chicago. From the condition of the abdomen and ovaries of one specimen, and the presence of several recently fledged young, I came to the conclusion that they had nested in the vicinity. It is barely possible, however, that these birds were unusually early arrivals from more northern breeding grounds, although the arrivals from the north generally begin about the last of the month. My suspicions that the species either breeds in this state, or at no far distant point, were strengthened the following season when several females examined the last of May contained eggs which would have been deposited within a short time.

202. Æ meloda var. **circumcincta** *Ridg.* WESTERN PIPING PLOVER. Very common summer resident along the Lake shore, breeding on the flat, pebbly beach between the sand dunes and shore. Arrives the middle of April and proceeds at once to breeding.

From a specimen shot the 24th of April, 1876, at Waukegan, I obtained a perfect egg, and the abdomen of several females obtained the same day exhibited unmistakable signs that they were already breeding, as did, also, the actions of the birds. Some thirty pairs were breeding along the beach at this place, within a space of two miles, and I afterwards found the birds as numerous at several points along the shore. Every effort was made to discover their nests without success, although the birds were continually circling about or standing at a short distance uttering an occasional note of alarm. The first of July, the year previous, Dr. Velie obtained young but a very few days old, at this same locality, showing that there is considerable variation in the time of breeding. This was also shown by specimens obtained the last of May,—and which I think were later arrivals than those found breeding in April,—having the ova just approaching maturity.

Departs the last of September. The larger portion of the specimens examined show the complete ring of *circumcincta*, while others exhibit but little more black than in *meloda*, or have the complete ring of the former indicated by faint black tips to the feathers across the breast.

Family **HÆMATOPODIDÆ.**

Genus **Strepsilas** *Linn.*

203. S. interpres (*Linn.*). TURNSTONE. Common migrant along Lake Michigan. Arrives May 15th in full breeding plumage and is found until the first week in June. Returns early in August, still in breeding plumage, which is exchanged for that of winter during the last of the month. Departs about the 20th of September. While here they are generally found in company with flocks of the smaller species of sandpipers.

Family RECURVIROSTRIDÆ.

Genus Recurvirostra *Linn.*

204. R. americana *Gmel.* AVOCET. A rare migrant. Generally occurs in small parties the last of April and first of May, and during September and the first of October. Frequents the borders of marshy pools.

Genus Himantopus *Briss.*

205. H. nigricollis *Vieill.* STILT. An exceedingly rare visitant. Dr. Hoy records the occurrence of a small flock near Racine, in April, 1847. In the collection of the Illinois Natural History Society, at Normal, Ill., is a fine specimen of this species, taken in McLean County, Ill.

Family PHALAROPODIDÆ.

Genus Steganopus *Vieill.*

206. S. wilsoni *Sab.* WILSON'S PHALAROPE. Very common summer resident in this vicinity. Found in abundance about damp prairies and on grassy marshes. Arrives about the middle of May and remains until into August. I have found its nest from the 25th of May to June 25th. The young usually appear about the middle of June and commence to fly the first of July. The breeding plumage of the female of this species is much brighter and richer than that of the male, as has been recently announced by Mr. A. L. Kumlein ("Field and Forest," July, 1876). The male builds the nest and attends exclusively to the duties of incubation, it alone possessing the naked abdomen during the breeding season. The female always remains near and shows great solicitude upon the nest being approached. The first plumage of the young, described by Dr. Coues on page 467, "Birds of the North-west," is retained until they depart for the south the last of July or early in August. The adults assume the winter plumage during July. This plumage is much like the breeding plumage of the male except that there is a hoary cast over the back and neck caused by grayish tips to the feathers, and the female has a greater amount of dull chestnut on the sides of the neck. The following description of the breeding plumage of the male is from a series of six specimens taken in Northern Illinois the last of May and first of June, 1876. Bill, legs, and feet pure black. Crown of head varying from a light to a dark blackish brown. The white stripe so evident on the nape of the female is entirely absent on young males of the preceding year, and but obsoletely indicated in old specimens. The short white stripe over the eye is nearly as distinct as in the female. Sides of the neck washed with faint chestnut brown, rarely as deep even as the fore part of the breast in the female. The glossy black auricular patch, which extends under the eye to the lores on the female, is merely indicated by a brownish line mixed with the color of the neck. The chestnut stripes along the back of the female are only indicated in very old and perfect plumaged males, by a few rusty colored feathers scattered over the shoulders and among the scapulars. The upper parts vary from a dark blackish brown with each feather tipped with lighter, to a light grayish brown, the feathers bordered with ashy white. In all cases the feathers have darker centres. Rump and upper tail coverts lighter and sometimes pure white. The primaries nearly as in the female. The remainder of the wing lighter. Tail as in the female. Under parts white except on fore part of breast, which is light ashy brown, the same extending along the sides to the flanks. A very light wash of chestnut is generally present on fore part of the neck. The male averages considerably smaller than the female. The breeding plumage of the female is as described by Dr. Coues ("Birds of the North-west," p. 467).

The nest is a simple structure of fine grass blades placed in a small saucer-shaped depression, generally in a perfectly open situation where but slight concealment is afforded by the few surrounding grass blades. Sometimes the eggs are deposited directly upon the ground, without any nest other than the slight hollow. The eggs usually number four and are very dark. Their general appearance is much like that of a small killdeer's egg with an unusual amount of dark markings.

Genus **Lobipes** *Cuv.*

207. L. hyperboreus (*Linn.*). NORTHERN PHALAROPE. Rather rare migrant the first of May, and the last of September and first of October. Frequents slow streams or marshy pools, where, swimming gracefully from one patch of floating weeds to another, it obtains its food. It is quite gentle and unsuspicious, and I have approached in a boat within five yards of one without its showing the least concern.

Genus **Phalaropus** *Briss.*

208. P. fulicarius (*Linn.*). RED PHALAROPE. Exceedingly rare. Occurs only during the migrations at about the same time as the preceding.

Family **SCOLOPACIDÆ.**

Genus **Philohela** *Gray.*

209. P. minor (*Gmel.*). WOODCOCK. Rather common summer resident. Arrives early in March, nests the first of April, and departs late in autumn.

Genus Gallinago *Leach.*

210. G. wilsoni *Temm.* WILSON'S SNIPE. Abundant during the migrations and not a very rare summer resident. Arrives the first of April and nearly all are gone by the first of May. Returns in fall the first of September and departs by the first of November. Mr. T. H. Douglas has obtained its eggs near Waukegan, and while there in the spring of 1876, I found several pairs during the breeding season, in various portions of the marsh near that place.

Morning and evening and throughout cloudy days in the early part of the breeding season the male has a curious habit of mounting high overhead, then descending obliquely for some distance, and as it turns upward strikes rapidly with its wings producing a loud whistling sound with each stroke. This manœuvre is repeated again and again, and appears to be performed for the same purpose as is the "booming" of the night-hawk. Besides this sound the Wilson's snipe has a peculiar, sharp cry during this season, which is uttered when the bird is disturbed. I first became acquainted with this note in May, 1876, when, while walking along a marshy strip of land, I was surprised to hear a loud *kâ-kâ-kâ-kâ-kâ*, uttered with great force and in a rather loud, harsh tone. Turning quickly I was still more astonished to find the author to be one of these birds. It was flying restlessly from post to post along a fence and showed the greatest uneasiness at my presence, the notes being repeated at short intervals. Although its nest was probably near, I could not discover it.

Genus Macrohamphus *Leach.*

211. M. griseus *Leach.* RED-BREASTED SNIPE. Rather common migrant. Passes north, often in large flocks, in May and returns the first of August, and lingers in small numbers about muddy pools until well into October. Quite unsuspicious while feeding and will allow a near approach.

Genus Micropalama *Bd.*

212. M. himantopus *Bd.* STILT SANDPIPER. Of rare occurrence. The 8th of August, 1873, I saw a single specimen near the Lake shore in Chicago, and the 10th of September the same year, Mr. R. P. Clarke obtained a specimen at the same place.

Genus Ereunetes *Ill.*

213. E. pusillus *Cass.* SEMI-PALMATED SANDPIPER. Very abundant migrant and many remain through the summer. From repeated dissections I am confident these are barren birds and, as Mr. Maynard suggests, probably young of the preceding year. Migrations: May 1st to 25th, and the last of August to October.

Genus **Tringa** *Linn.*

214. T. minutilla *Vieill.* LEAST SANDPIPER. Common migrant. Not so numerous as the preceding. Arrives the 1st of May and remains until the last of the month; returns with the preceding. The 5th of June, 1875, I found one of these birds building its nest near the Calumet River. When first observed it was busily at work in the midst of a small bunch of grass, but upon my approach it ran a few feet to one side and watched my movements. The nest was nearly finished, and was a shallow depression in the centre of the tuft of grass, formed by the bird, which had just commenced lining it with small straws. Unfortunately work was not resumed upon the nest after my visit, but the birds were noticed several times in the vicinity, and they probably had a nest in some safer spot. Several least sandpipers were observed near Waukegan the first of July, 1875, by Mr. Rice, who is certain they had nested in the vicinity.

215. T. bairdii *Vieill.* BAIRD'S SANDPIPER. A rather uncommon migrant during the middle of May, and the last of August and first of September. It is generally found in small parties or singly, with other species of sandpipers, but it sometimes occurs in large flocks.

216. T. maculata *Vieill.* GRASS SNIPE. Very abundant migrant. Sometimes uniting into large flocks containing several hundred and frequents wet prairies or marshes. At other times it can only be found singly scattered over the same territory. March 25th to May 10th, and the middle of September to the first of November. A few remain through the summer, but whether they breed or not I have been unable to decide.

217. T. bonapartei *Schleg.* BONAPARTE'S SANDPIPER. Rather uncommon migrant. Dr. Hoy writes "that it was formerly abundant during the migrations but is now rare" (at Racine). June 9th, 1876, I obtained one specimen and saw quite a number of others upon the Lake shore near Waukegan. Mr. R. P. Clarke informs me that he has taken it late in autumn upon the Lake shore near Chicago.

218. T. maritima *Brünn.* PURPLE SANDPIPER. Very rare visitant during migrations. A fine adult male obtained on the Lake shore, near Chicago, November 7th, 1871, is in the collection of Dr. J. W. Velie. When first seen it was in company with a flock of sanderlings. This is the only instance of the occurrence of this species of which I have learned.

219. T. alpina var. **americana** *Cass.* RED-BACKED SANDPIPER. Very abundant migrant. Arrives in full breeding plumage the last of

May and is found about muddy pools and flats near the Lake until the 5th of June. Returning in winter dress during September it remains well into October. At this season it is generally found in small parties, while in spring the flocks often contain hundreds of individuals.

220. T. canutus *Linn.* KNOT. This is another of the so-called "maritime species" which regularly visits its breeding grounds by way of the "Great Lakes," as well as along the coast. It is not a common but a regular migrant, passing north during May. It returns early in September and remains until October. I have never observed it away from the vicinity of the Lake shore, where it is generally found in company with one or two others of the same family.

Genus **Calidris** *Cuv.*

221. C. arenaria *Linn.* SANDERLING. Abundant migrant along the Lake shore. Arrives in full breeding plumage—which varies greatly with individuals—about the 20th of May, and is found in flocks, numbering from five to seventy-five, along the shore, until June 10th. Returns the first of August, still wearing its breeding dress, which is changed the last of the month for the duller garb of winter. Departs for the south by the 20th of October. This species, with *Æ. meloda*, is found almost exclusively along the bare sandy beach, where it would seem an impossibility for it to obtain a living.

Genus **Limosa** *Briss.*

222. L. fedoa (*Linn.*). MARBLED GODWIT. Rather common migrant. April 15th to May 15th, and September 10th to October 20th.

223. L. hudsonica *Sw.* HUDSONIAN GODWIT. Not very rare during the migrations. April 15th to May 10th, and September to the first of October. More common along the water courses in the western part of the state.

Genus **Totanus** *Bech.*

224. T. semipalmatus *Temm.* WILLET. Rare summer resident in the marshes and on wet prairies. Arrives the last of April and first of May. Departs by the first of October.

225. T. melanoleucus *Gmel.* GREATER YELLOW-LEGS. A common migrant and regular summer resident. Breeds. Arrives about the middle of April, the larger portion passing north early in May. Returns September first and remains until the last of October. In June, 1875, I found several pairs of these birds about the Calumet Marshes, where, from their actions, I was certain they were breeding, but was not fortunate enough to find their nests. The 10th of June, 1876, Mr. Rice observed a pair about a prairie slough near Evanston. A few days later a set of four eggs were brought him from a similar situation a few miles north-west of that place, and from the description of the parent bird—driven from the nest—he decided they must belong to this species. I perfectly agree with Mr. Rice's decision, for the prominent characteristics noticed by the collector are obviously applicable to this bird.

The nest was situated in a slight depression at the base of a small hillock near the border of a prairie slough, and was composed of grass stems and blades. The eggs measure respectively 1·70 × 1·30; 1·72 × 1·31; 1·74 × 1·32; 1·80 × 1·38 inches. The ground color is a deep grayish white, marked on three eggs with spots of dark brown, and on the other egg with spots and well defined blotches of a considerably lighter shade of the same. In addition there are shell markings and obscure spots of lilac. The markings are disposed quite abundantly over the surface of the egg, but are more numerous about the large end.

226. T. flavipes *Gmel.* Lesser Yellow-legs. Much more numerous than the preceding. Frequents the same localities. Arrives a few days later and departs earlier for the south. A few breed. I obtained the young, barely able to fly, near a prairie slough the first of July, 1874, a few miles from Chicago, and have since observed several pairs during the breeding season about the Calumet Marshes.

227. T. solitarius *Wils.* Solitary Tatler. Common migrant. Arrives the first of May and remains until about the 25th, when the majority go farther north. I have several times taken young of this species just able to fly, and have observed the adults throughout the breeding season. I do not think there is the slightest doubt of its breeding in this vicinity. Departs for the south in August and September.

Genus **Tringoides** *Bonap.*

228. T. macularius *Linn.* Spotted Tatler. Very common summer resident. Arrives in April and departs late in autumn. Breeds in abundance among the small sand hills along the Lake shore. Near Waukegan, the first of June, 1876, I saw Mr. T. H. Douglas secure over two dozen of their eggs in considerably less than an hour. The nests were generally placed under a small shrub or in a thin tuft of grass and the eggs could be seen several yards away.

Genus **Actiturus** *Bon.*

229. A. bartramius (*Wils.*). Field Plover. Very common summer resident. Arrives early in April and departs in September. Frequents in greatest abundance the borders of marshes and half wild prairies. Quite difficult to approach when it first arrives, but during the breeding season becomes perfectly reckless, and hovers over head or follows through the grass within a few yards until it has escorted the intruder well off its domain. The presence of a dog in the vicinity of its nesting place is the signal for a general onslaught by all the birds of the vicinity, which hover over the dog, and with loud cries endeavor to drive it away. Being but little appreciated as game it is seldom hunted in this vicinity.

Genus **Tryngites** *Cab.*

230. T. rufescens *Vieill.* BUFF-BREASTED SANDPIPER. Very rare migrant. A specimen is in the collection of Mr. R. P. Clarke, obtained upon the Lake shore, at Chicago, September 4th, 1873. Dr. Hoy gives it as "quite common" from September 15th to October 10th, near Racine (Wis. Ag'l Rep., 1852). This is, I think, a mistake, as is also his note regarding the abundance of *T. maritima* in the same list.

Genus **Numenius** *Linn.*

231. N. longirostris *Wils.* LONG-BILLED CURLEW. Formerly very abundant during the migrations, and a common summer resident. Now rather uncommon in the migrations and a very rare summer resident. A pair nested on the Calumet Marshes the spring of 1873. More numerous on the large marshes in Central Illinois. Arrives the last of April and departs in October.

232. N. hudsonicus *Lath.* HUDSONIAN CURLEW. Very rare migrant with the preceding.

233. N. borealis (*Forst.*). ESQUIMAUX CURLEW. Rather common during the migrations. Arrives a little later than the larger species and passes north with short delay. Returns the last of September and in October. Frequents wet prairies, with the golden plover.

Family **TANTALIDÆ.**

Genus **Tantalus** *Linn.*

234. T. loculator *Linn.* WOOD IBIS. An exceedingly rare summer visitant from Southern Illinois. Dr. Hoy has a specimen in his collection obtained at Racine, September 10th, 1869, and states that a second specimen was obtained near Milwaukee, and is now in a museum at that place.

Genus **Ibis** *Mœhring.*

235. I. falcinellus var. **ordii** *Coues.* GLOSSY IBIS. A very rare visitant. I know of but two or three instances of its occurrence.

Family ARDEIDÆ.

Genus Ardea *Linn.*

236. A. herodias *Linn.* GREAT BLUE HERON. Common summer resident. Arrives in April and I have seen a specimen on the Lake shore the first of December after a severe snow storm.

237. A. egretta *Gmel.* GREAT WHITE EGRET. A rather common summer visitant throughout Northern Illinois. Generally arrives the last of July and departs in September. Mr. Rice observed two specimens near Evanston, March 31st, 1875. Breeds in Southern Illinois and perhaps in other parts of the State.

238. A. candidissima *Gm.* LITTLE WHITE EGRET. Much less common than the preceding. Occurs at the same time.

NOTE. *A. cærulea* will probably be found, as it is even now more numerous in Southern Illinois during August and September than the two preceding species.

239. A. virescens *Linn.* GREEN HERON. Common summer resident everywhere except upon the open prairie, where, however, stragglers are often taken.

Genus Nyctiardea *Sw.*

240. N. grisea var. **nævia** *Allen.* NIGHT HERON. Common. Owing to its frequenting the almost impenetrable wild rice swamps this species would be overlooked on a transient visit to their haunt. The first of July, 1874, I saw a few young of the year in the Calumet Marshes, but it was not until June, 1876, that I learned anything regarding their habits in this state. The middle of this month, in company with my friend Mr. T. H. Douglas, I visited Grass Lake, Lake County, Illinois, some miles west of Waukegan. This "lake" is simply a widening of the Fox River, which flows through its centre, producing a shallow body of water a mile wide and about three miles long. A large portion of the lake is covered with a dense growth of wild rice. While collecting near a large patch of this we were surprised to see a number of night herons arise from the interior of the patch and commence circling about uttering hoarse cries. Upon examining the place we were still more surprised to find that the birds were breeding in this apparently improbable location. During this and the following day we examined, within an area of two acres, at least fifty nests of this species. They were all placed in the midst of particularly dense bunches of rice, the stiff, last year's stalks of which, converging slightly near the roots, formed a convenient base for their support. The nests were all well-built structures, composed of innumerable small pieces of dead rice stalks, varying from two to ten inches in length. Some of the nests were quite mathematically built, the material being arranged so that the usual cylindrical form would become either a decided pentagonal or hexagonal figure. The nests averaged from twelve to fifteen inches in diameter at the top and from ten to thirty inches in depth. So firmly were they built that I several times stood upon a large nest, to take a more extended view, and did it but little damage. A few contained fresh eggs, and a few had young from one to ten days old, but the majority contained eggs with half grown embryos. The parents exhibited great solicitude while we were in the vicinity, but were so cautious that we succeeded in shooting but two.

Genus **Botaurus** *Steph.*

241. B. minor *Boie.* BITTERN. Very common summer resident in marshes and prairie sloughs. Arrives the last of March and departs the first of November. Nests principally in prairie sloughs. In over a dozen nests examined I have found but little variation. They are generally placed in rank swamp-grass or rushes close to the surface of the water, from which the nest is separated by a mass of grasses and other material either found upon the spot or collected from the immediate vicinity by the birds. The nest itself is a loosely formed platform constructed of the material nearest at hand, be it grass or reeds. In one instance some boys collecting for me found a nest of this species which the female refused to desert, so it was captured and brought me alive with the eggs, which were but slightly addled.

Genus **Ardetta** *Gray.*

242. A. exilis (*Gmel.*). LEAST BITTERN. A common summer resident everywhere in marshes and sloughs. It arrives the first of May and nests the last of this and all of the following month. The nest of this species I have always found supported, from one to three feet above the water, by the surrounding rushes. It is a very frail structure, being a thin platform from one to three inches thick, with scarcely depression enough in the centre to prevent the eggs from rolling out, and is composed of small dry pieces of reeds. The eggs vary from two to six in number. When approached while upon the nest the female generally slips quietly to one side and endeavors to find concealment, but should the approach of the intruder be hasty, she seeks safety in flight. Under ordinary circumstances this species places its nest by itself, but should an unusually good feeding ground be discovered, containing but one or two small patches of reeds, it will make the best of circumstances, and in such a place I have often found six or eight nests in close proximity.

Family GRUIDÆ.

Genus **Grus** *Linn.*

243. G. americanus *Linn.* WHOOPING CRANE. Once an abundant migrant, but is now of rare occurrence in this vicinity. Along the Illinois River and more thinly settled portions of the State it is still common during the migrations, and a few pairs breed upon the large marshes in Central Illinois.

244. G. canadensis *Linn.* SANDHILL CRANE. Formerly nested abundantly on all the larger marshes, but now few remain to breed except on one or two large marshes in the central part of the State, where, I understand, they are still quite numerous.

Family RALLIDÆ.

Genus **Rallus** *Linn.*

245. R. elegans *Aud.* KING RAIL. Common summer resident. Arrives the last of April and departs in October. Have obtained half-grown young the first of July, although they usually breed later than this. Found about grassy marshes and prairie sloughs.

246. R. virginianus *Linn.* VIRGINIA RAIL. Common summer resident. Arrives and departs with the preceding. I have obtained nests with eggs from the 6th of May until the middle of June. This species is found in almost any place where it can find suitable food. I have often flushed it in thickets when looking for woodcock, as well as from the midst of large marshes. The nest can rarely be distinguished from that of the Carolina rail in form or structure, and is generally placed in a similar location, with the exception that the present species shows a greater preference for dense tufts of grass. I have never seen more than nine eggs in a nest of this species.

Genus **Porzana** *Vieill.*

247. P. carolina *Cab.* CAROLINA RAIL. Exceedingly abundant summer resident in all marshy situations. Arrives the first of May and departs in October. Nests along the borders of prairie sloughs and marshes, depositing from eight to fourteen eggs. Their nest may often be discovered at a distance by the appearance of the surrounding grass, the blades of which are in many cases interwoven over the nest, apparently to shield the bird from the fierce rays of the sun, which are felt with redoubled force on the marshes. The nests are sometimes built on a solitary tussock of grass, growing in the water, but not often. The usual position is in the soft, dense grass growing close to the edge of the slough, and rarely in grass over eight inches high. The nest is a thick matted platform of soft marsh grasses, with a medium sized depression for the eggs. In the spring of 1875, the sudden rise of the water in the sloughs in this vicinity flooded a great many water bird's nests, and among them Carolina rail's nests. Visiting the marshes soon after, I found that in every rail's nest that had been flooded the eggs had been broken by the rail piercing the side with her beak. In one instance the bird was found beside the nest, and when I looked at the eggs I found a portion of them broken and the contents still oozing out. I found that the coots (*Fulica americana*) and the gallinules had the same habit when their nests were destroyed by the water, although it was less common with them than with the rail. In autumn great numbers of these birds frequent the floating weeds along the borders of rivers where they are sometimes in such numbers that several may be killed at a single discharge. Dr. Bannister informs me that he has found quite a number of these birds lying dead, but without showing marks of injury, upon railroad tracks.

248. P. noveboracensis *Cass.* LITTLE YELLOW RAIL. Not very rare. Arrives early in May. Several specimens are taken each spring before the grass becomes sufficiently high to effectually conceal them. It undoubtedly breeds here, since the Smithsonian possesses a set of six eggs taken with the parent bird, May 17, by Mr. J. W. Tolman, at Winnebago, Illinois (fide, Prof. S. F. Baird in epist.). The following is the description of the above set of eggs from Coues's "Birds of the North-west": "They are the only ones I have seen and differ from all those of *P. carolina* in the color of the ground, which is a rich, warm buffy-brown marked at the great end with a cluster of reddish-chocolate dots and spots. Size, 1.15 by 0·85 to 1·05 by ·80."

249. P. jamaicensis *Cass.* LITTLE BLACK RAIL. Like the preceding, of not very rare occurrence. Breeds. During the spring of 1875 I saw three specimens in the Calumet Marshes. The first was observed early in May. On the 19th of June, the same season, while collecting with me near the Calumet River, Mr. Frank DeWitt, of Chicago, was fortunate enough to discover a nest of this species containing ten freshly laid eggs. The nest was placed in a deep cup-shaped depression in a perfectly open situation on the border of a marshy spot, and its only concealment was such as a few straggling *carices* afforded. It is composed of soft grass blades loosely interwoven in a circular manner. The nest, in shape and construction, looks much like that of a meadow lark. The following are its dimensions in inches: inside depth, 2·50; inside diameter, 3·25; outside depth, 3·50; outside diameter, 4·50. The eggs are a creamy-white instead of clear white, as I stated in a recent article (Bull. Nutt. Orn. Club, Vol. I, p. 43), and average 1·00 by ·81 inches. They are nearly perfectly oval, and are thinly sprinkled with fine reddish-brown dots, which become larger and more numerous at one end. Minute shell markings in the form of dots are also visible. Owing to the small diameter of the nest the eggs were in two layers.

Genus **Gallinula** *Briss.*

250. G. galeata *Licht.* FLORIDA GALLINULE. Abundant summer resident everywhere in marshes and the larger prairie sloughs. Arrives the last of April or the first of May. Generally has a full set of eggs, numbering from seven to twelve, the first week of June. Its nests are placed wherever fancy dictates; on low ridges a rod or more from the water; in perfectly bare situations on the borders of marshes, or in the midst of the bulrushes or wild rice growing in several feet of water. The material used varies with the situation, from fine grasses to the coarsest rushes and fragments of wild rice stalks. In the latter case the nest often floats in the water and is held in place by the surrounding reeds. The young possess the usual black down and disproportionate feet of members of this family at an early age, but the basal two-thirds of the bill is bright red, the tip only being yellow. I have placed eggs under a hen, but the young, unless removed as soon as hatched, would scramble out and manage to get away. At this age they have a clear metallic peep, quite unlike that of a chicken.

Genus **Porphyrio** *Temm.*

251. P. martinica (*Linn.*). PURPLE GALLINULE. Very rare visitant. A male specimen was taken in May, 1866, by Mr. C. N. Holden, Jr., near Chicago, and Dr. Hoy informs me of its capture at Racine.

Genus **Fulica** *Linn.*

252. F. americana *Gmel.* COOT. Exceedingly abundant. Summer resident in large marshes, and it is far from rare in any marshy situation. Arrives the last of April and remains until the last of November. Nests at the same time as the Florida gallinule, but shows a greater preference for reed patches in which its nests are usually located, often in from two to four feet of water. The nests are generally larger than those of gallinules, and rarely composed of other material than the dry stalks of reeds. Dr. Coues' description of the nidification of this species will answer for most of the cases I have observed, and I have examined a large number of nests. (See "Birds of the North-west," p. 542.) As winter approaches, and the marshes and shallow pools become covered with ice, these birds congregate in immense flocks on the rivers and small lakes, and remain until the cold weather closes the streams.

This bird has a curious habit when approached by a boat in a stream, rising often before the boat is within gunshot, and flying directly by the boatman, generally so near that it may be easily brought down. The abundance of ducks and other game birds has caused the birds of this family to be but little molested, until within a few years, when the amateur sportsmen from Chicago, finding the ducks difficult to obtain, and "mud hens," as coots and gallinules are called, conveniently tame, have turned their batteries upon them and have caused a diminution in their numbers about the Calumet Marshes. But in the more retired marshes they still breed in undiminished numbers.

Family **ANATIDÆ**.

Genus **Cygnus** *Linn.*

253. C. buccinator *Rich.* TRUMPETER SWAN. Occurs during the migrations. Far from common.

Although many examples of the following species are brought to the Chicago market during the migrations, it is very rarely that this species occurs.

254. C. americanus *Sharp.* AMERICAN SWAN. Rather common during the migrations and a winter resident in the southern extreme of the state. In the spring of 1876 they were more numerous than usual; quite a large number of specimens were in market and many were seen on the small lakes and large prairie sloughs in this vicinity.

Genus **Anser** *Linn.*

255. A. albifrons var. **gambeli** *Cs.* WHITE-FRONTED GOOSE. Very abundant migrant, occurring in large flocks. Arrives from the north in October, and disperses over the state. Found in large numbers in corn fields in the central portion of the state, where hundreds are killed and shipped to the market. When the streams become frozen they remove farther south. Return early in March and frequent the same localities until about the first week of April, when, in company with the various other small species of geese, they depart for the north. During late seasons they occasionally linger until the last week of April.

The individual variation in this species is very great. A large majority have the ordinary white frontal band and the under parts plentifully mottled with black. In others the black gradually decreases until some specimens do not show the least trace of dark on the abdomen; in such instances the frontal white band is usually present. The young exhibit a dark brown frontal band in place of white, but with more or less dark spots on the abdomen. In very high plumage the abdomen becomes almost entirely black, only a few rusty colored feathers being interspersed through the black. The white nail on the bill is generally crossed by one or more longitudinal stripes of dark horn color. In spring, as the breeding season approaches, the bill becomes a clear waxy yellow. There is also much variation in size among adults of this species. I have examined a number of specimens which by direct comparison were at least *one-fourth* smaller than the average.

256. A. cærulescens *Linn.* Blue Goose. Although less abundant than the preceding species, it is far from uncommon. Many are sent to the Chicago market with the preceding during the migrations. During some seasons the blue geese are nearly as numerous as the white-fronted. Its habits and migrations, while with us, are essentially the same as those of the preceding species. The adults of this species invariably possess the white head and upper part of the neck, which in the younger specimens is more or less variegated with dark feathers. These disappear as the bird becomes older, and in many the head is a pure snowy white, in sharp contrast to the dark plumage of the rest of the upper parts. The young would appear, at first sight, to be a distinct species, so different is the pattern of coloration. The white of the head, neck, abdomen and tail coverts is entirely absent, and the bird is of an almost uniform ashy plumbeous, slightly darker about the head and lighter on the abdomen. This plumage is retained until the second year, at least, as many specimens are procured in spring with the dark head, neck and abdomen still immaculate, and these, I think, are young of the preceding year. At the same time specimens are found with the dark feathers about the head well mixed with white, representing the second year. In birds of the third year the white predominates, but not until the fourth or fifth year does the plumage become perfect.

257. A. hyperboreus var. **hyperboreus** *Pall.* Snow Goose.

257*a*. Var. **albatus** *Cass.* Lesser Snow Goose. Both forms are found throughout the state during the migrations, and, although Mr. Ridgway gives the *albatus* as the more common form, I think they occur in about equal numbers. The adult plumage of this species, as is well known, is pure white, with the primaries tipped with jet black. The young are quite different. The crown, back of neck and fore part of shoulders are dark plumbeous; the tip of each feather being whitish produces a grizzled appearance. A dark line extends from the eye to the upper angle of the bill. The frontal region, cheeks, throat, fore part of neck, breast, sides of body and rump are soiled ashy, lighter than the back of the head and neck, and appearing much as though caused by the continued contact of white feathers with dark earth; but a close examination shows that the effect is produced by each feather being mottled with fine dusky spots, which on the sides nearly cover the entire feather. The shoulders, scapulars, tertials, greater coverts and secondaries, are of a varying shade of dark plumbeous edged with lighter, which, on the tertials and secondaries, becomes pure white, and is of considerable width. The tail feathers are much the same and the lesser wing coverts are like the sides of the neck — a grizzly ashy. The bill, feet, and tips of the primaries are black, as are two or three of the outer secondaries. This species generally migrates in flocks of large size, consisting only of its own kind. At times, however, the three species unite and proceed in company. It frequents the cornfields in Central Illinois while here, and migrates a little later in the fall, and earlier in the spring, than the white-fronted goose.

Genus **Branta** *Scopoli.*

258. **B. bernicla** *Linn.* BRANT GOOSE. Probably a rare visitant, but the only instance known to me of its capture in this portion of the country is a specimen taken by Dr. Hoy, from a flock of three, upon the Lake shore near Racine. The bird is now in his collection.

259. **B. canadensis** var. **canadensis** *Linn.* An abundant migrant. Arrives early in October and remains until the first of December. Returns in March and remains until well into April. Formerly bred commonly in the marshes throughout the state, and still breeds sparingly in the more secluded situations.

259*a*. Var. **hutchinsi** *Rich.* HUTCHINS' GOOSE. Rather common, but not the most common form, as my friend Mr. Ridgway states in his "Catalogue of Illinois Birds." I once had the pleasure of examining a series of Canada Geese which were sent to market by the same hunter, and obtained the same day in Central Illinois. Among the eight specimens in the lot were typical representatives of the two forms, above-named. In addition were several specimens which formed a direct chain in which it was impossible to tell where one variety ended and the other commenced. The size of the specimens, the coloration, and indeed every particular, aided in perfecting the series, except the number of tail feathers, which was eighteen throughout. In *hutchinsi* I have found this to be a very variable character, as a large portion of the specimens which agree perfectly with the dimensions of the latter possess the eighteen tail feathers, instead of sixteen, as given by authors.

Genus **Anas** *Linn.*

260. **A. boschas** *Linn.* MALLARD. An exceedingly abundant migrant and common summer resident in the more secluded marshes. Once nested abundantly in the prairie sloughs and along borders of marshes. The spring migrations extend from the last of March to

the middle of April. Autumnal, from the last of September until the last of November. The full complement of eggs is deposited before the middle of May, in some tussock of grass near the edge of the marsh.

261. A. obscura *Gmel.* Dusky Duck. An uncommon migrant with the preceding, and a very rare summer resident. Among the countless number of mallards killed yearly in this state are scarcely found more than one in two hundred of this species. One or two pairs nest each year on the Calumet Marshes.

Genus **Dafila** *Leach.*

262. D. acuta (*Linn.*). Pintail Duck. Very abundant migrant, and rare summer resident. Arrives early in October and remains until the last of November; in spring passes north by the first of April. Each year a few pairs breed upon the marshes in this vicinity, but whether they breed in the State away from the Lake region I have no means of knowing. In the spring of 1875 several pairs of these birds nested in the prairie sloughs near the Calumet River, and on the 29th of May I found a nest containing three freshly laid eggs. The female was flushed from the nest when scarcely more than a rod away, and was at once joined by the male from a small slough a few rods distant. The nest was in the centre of a tall, thick bunch of grass on a small ridge between two sloughs, and was a slight hollow thickly lined with grass stems; no down had been added. The parent birds circled about overhead, often coming within gunshot, during the whole time I was in the vicinity. The eggs average 2·25 by 1·50, and are a grayish olive, similar to the set described by Dr. Coues ("Birds of the North-west," p. 563).

In June, 1876, several pairs were seen at Grass Lake, on the Fox River, but their nests were not discovered. In the collection of Dr. J. W. Velie is a male hybrid between this species and the mallard.

Genus **Chaulelasmus** *Gray.*

263. C. streperus (*Linn.*). Gadwall. This beautiful species is very common during the migrations from the middle of October to the last of November, and from the first to the last of April. A very rare summer resident. I have seen but two or three pairs here in the breeding season.

Genus **Mareca** *Steph.*

264. M. penelope *Selby.* European Widgeon. Exceedingly rare straggler. Two instances are known; one quoted by Mr. Ridgway on the authority of D. G. Elliot, in "Proceedings of the Zoological Society" (see Ridg., Cat. Birds Ascer. to occur in Ill., 268), and a second is furnished by Mr. C. N. Holden, jr., who informs me that a fine adult male was shot on the Calumet Marsh, April 13, 1876, and is now preserved in a collection in Chicago. It has also been shot on Lake Mendota, in Wisconsin, by Mr. Kumlien (Hoy).

265. M. americana (*Gmel.*). AMERICAN WIDGEON. A very abundant species during the migrations and not very rare summer resident. Arrives in spring about the middle of March and remains until about April 20th. It nests about the borders of marshes and prairie sloughs. While here during the migrations these birds show a decided preference for the open water on overflowed marshes and large sloughs, and are very difficult to approach. Immense numbers are shot along the various rivers in the state and sent to the Chicago market.

Genus **Querquedula** *Steph.*

266, Q. carolinensis (*Gmel.*). GREEN-WINGED TEAL. Very common migrant. Arrives about the 5th to the 10th of April, and the majority pass north by the 25th. Returns the first of October, and remains until into November. Breeds sparingly. I have known of a few instances of its nest being found, and have myself observed several pairs of the birds in this vicinity during the breeding season.

267. Q. discors (*Linn.*). BLUE-WINGED TEAL. Very abundant migrant and a common summer resident in all suitable localities. The middle of May, 1875, I obtained a nest of this species containing fourteen freshly laid eggs. The parent was flushed from the nest within a few yards. It was situated near a branch of the Calumet Marsh and close to the rail-road track, being about midway between the track and fence in a dense bunch of grass. The nest was a well matted structure composed of feathers and grass, with the rim turned in so as to partly cover the bird when sitting. As has been the case each time I have discovered a duck's nest, and often when I have been in the vicinity of one not known to me, the parents circled about me the entire time I was near the nest, often coming within gunshot and exhibiting considerable anxiety. Arrives a few days later than the preceding in spring, and leaves at about the same time in autumn.

Genus **Spatula** *Boie.*

268. S. clypeata *Linn.* SPOONBILL DUCK. An abundant migrant and rather common summer resident. Breeds in much the same localities as the preceding. Its eggs are deposited early in May. Arrives the last of March, and the larger number pass north before April 20th. The autumn migrations extend from the first of October until the middle of November.

Genus **Aix** *Sw.*

269. A. sponsa *Boie.* WOOD DUCK. Common migrant and rather common summer resident in secluded localities, and is especially abundant in the "bottoms" along the rivers in the southern part of the state. Arrives early in April and departs the last of October.

Genus **Fuligula** *Steph.*

270. F. marila (*Linn.*). GREATER SCAUP DUCK. A rare migrant. Present with the following species in about the same proportion that *A. obscura* bears to *A. boschas.*

271. F. affinis *Forst.* LESSER SCAUP DUCK. An exceedingly abundant migrant and in years when the Lake does not become frozen over is a resident through the year. This is not an uncommon species upon the larger marshes and inland lakes during the breeding season. Commence to arrive in large numbers from the south the last of February or first of March, according to the season, and are mostly gone by the 20th of April. About the time they leave for more northern breeding grounds they congregate in very large flocks on rivers or small lakes, and soon all have disappeared from these haunts and none, except the comparatively few which remain to breed, are found there again until they return in autumn, about the 5th to 10th of October. Flocks may be found upon Lake Michigan from one to two weeks after they have left the inland waters. Their young are hatched from the first to the middle of June.

272. F. collaris *Donov.* RING-NECK DUCK. In about equal numbers with the preceding during the migrations. Its habits, haunts, and time of migration, agree very closely with those of the little scaup duck. This species also breeds about the marshes in North-Eastern Illinois, but in smaller numbers than the preceding.

273. F. ferina var. **americana** *Eyton.* RED-HEAD DUCK. Very common migrant. Arrives the last of March and lingers until the last of April. Returns the last of October and remains until the wild rice swamps freeze over, the last of November.

274. F. vallisneria *Wils.* CANVAS-BACK DUCK. Very common migrant. Migrates with the preceding. Like other species of the *Fuligulinæ* found here, the canvas-back shows a liking for open water and is more numerous on the small inland lakes than in the marshes.

Genus **Bucephala** *Baird.*

275. B. clangula (*Linn.*). GOLDEN-EYE DUCK. Common migrant throughout the state and abundant on Lake Michigan, where it is usually a winter resident. This is usually a very shy species, but occasionally it exhibits great stupidity. I have known of several being shot from an open boat upon the Lake, by placing out wooden decoys which they would approach, sometimes while the gunner was standing in plain view. This, however, was a rare occurrence. Arrives the last of October or first of November, and departs the first of April.

276. **B. islandica** *Bd.* BARROW'S GOLDEN-EYE DUCK. A winter resident upon Lake Michigan, and found irregularly throughout the state at that season. A specimen was obtained at Mt. Carmel, on the Wabash River, in December, 1874, by Professor F. Stein, and I have observed it at Chicago. Dr. Hoy writes that a specimen was shot at Racine during the winter of 1860. They are probably not uncommon upon the Lake in winter, but owing to the great difficulty experienced in collecting ducks on perfectly open water at this season, a definite knowledge of the numbers in which this and several other aquatic species visit us during winter has not been obtained.

277. **B. albeola** *Bd.* BUFFLE-HEAD DUCK. The most abundant species of the genus. Frequents the rivers and other inland waters in greatest abundance. Immense numbers are sent to the Chicago market each season. Although abundant with the preceding upon Lake Michigan, it is still more numerous on the inland waters. Winter resident. Arrives the last of October and sometimes remains until the first of May.

Genus **Harelda** *Leach.*

278. **H. glacialis** (*Linn.*). OLD-WIFE DUCK. An exceedingly abundant winter resident upon Lake Michigan and sparingly dispersed throughout the state during that season. It was obtained by Professor Stein at Mt. Carmel, in December, 1874. A few stragglers make their appearance the last of October, but the main body do not arrive until about the first of December. The last of March or first of April nearly all depart for the north, but a few are found until the last of the month. Just before they migrate they unite in large flocks and make a great gabbling and noise. At all times while here they are very shy and difficult to obtain.

Genus **Histrionicus** *Lesson.*

279. **H. torquatus** (*Linn.*). HARLEQUIN DUCK. Rather rare winter resident upon Lake Michigan. Dr. Hoy has secured several specimens at Racine.

Genus **Somateria** *Leach.*

280. **S. mollissima** *Leach.* EIDER DUCK. Not a very rare winter resident upon Lake Michigan and probably occurs in suitable places throughout the state. In my collection is an immature specimen, obtained near Chicago in December, 1874, and Dr. H. B. Bannister has several times noted them at Evanston. Dr. Hoy informs me that a specimen was shot at Racine in January, 1875.

281. S. spectabilis *Leach.* King Eider. Rare winter visitant—perhaps winter resident—to Lake Michigan and other parts of the state. "An adult female, obtained at Chillicothe, on the Illinois River, in the winter of 1874, has been sent to the National Museum by W. H. Collins, Esq., of Detroit, Mich." (Ridgway). "A single specimen has been taken at Milwaukee, Wisconsin, and is preserved in a collection at that place" (Hoy).

Genus **Œdemia** *Flem.*

282. Œ. americana *Sw.* Black Scoter. Rather common upon the Lake. Winter resident. Arrives the first of November and departs by the first of April.

283. Œ. fusca (*Linn.*). Velvet Scoter. Like the preceding a rather common winter resident upon the Lake, and occurs throughout the state, specimens being sent to the Chicago market from the Illinois River and various other streams in Central Illinois.

284. Œ. perspicillata *Steph.* Surf Duck. A common winter resident upon Lake Michigan and occurs throughout the state at this season. Quite a number of specimens were taken upon the Calumet Marshes during the fall of 1875, and many others seen. Arrives the last of October and departs the last of March. "A single specimen, an immature bird, was obtained at Mt. Carmel by Professor Stein in October, 1875" (Ridgway).

Genus **Erismatura** *Bonap.*

285. E. rubida *Bonap.* Ruddy Duck. Very common during the migrations. Summer resident. Breeds. The spring migration begins about the middle of April and continues until the 5th of May. A few return as early as the first of October, but the main fall migration commences the last of this month and extends to the first of November. The middle of September, 1875, my friend Mr. T. H. Douglas, of Waukegan, found a pair with eight or ten full grown young in a small lake near that place, and obtained several specimens. As the fall migration of this species does not commence until some weeks later than this, I think it very probable these birds were hatched in the vicinity. This supposition is rendered still more reasonable by the following observations. The 12th of June, 1875, while walking through the dense grass close to the shore of Calumet Lake, looking for sharp-tailed finches, a female ruddy duck started from the grass a few yards in advance and flew heavily away and alighted in the reeds a short distance out from shore. Being well acquainted with the species, I at once recognized the bird by unmistakable peculiarities of form and flight, as well as coloration, so I did not shoot it as I could easily have done, but instead, made a thorough search for the nest, which I was certain must be near. The dense grass, about three feet high, proved an effectual shield, however, and I was compelled to depart without the coveted eggs. The middle of June, 1876, while rowing among the numerous rice patches upon Grass Lake, in company with Mr. T. H. Douglas, a ruddy duck arose a short distance in advance and flew off in plain view, leaving no doubt as to the species, as we both recognized it at sight. The only other record of the occurrence of this species in the United States during the breeding season is that of Dr. Coues, who, while connected with the Northern Boundary Survey, found them breeding in numbers in Northern Dakota and Montana.

Genus **Mergus** *Linn.*

286. M. merganser *Linn.* GOOSANDER. Very common migrant, and a few remain about airholes in streams and ponds or upon Lake Michigan, during the winter. I do not think this species remains to breed, but it is barely possible it may in rare cases. Arrives the last of October and departs the last of March and first of April.

287. M. serrator *Linn.* RED-BREASTED MERGANSER. The rarest species of the genus in this vicinity. Frequents small reedy lakes, where it is a rare summer resident. Nests upon old muskrat houses. The migrations are: in fall, from October first to the last of November; in spring, the last of March to the first of May. A very rare winter resident. During the height of the migrations it is rather common upon Lake Michigan in small flocks.

288. M. cucullatus *Linn.* HOODED MERGANSER. Very abundant migrant. Common winter resident upon Lake Michigan. Breeds sparingly throughout the state. Arrives the last of October and remains until the first of April. The last of August, 1875, I found several pairs of these birds with partly grown young upon some small lakes in Union County, Southern Illinois.

Family **PELECANIDÆ.**

Genus **Pelecanus** *Linn.*

289. P. trachyrhynchus *Lath.* WHITE PELICAN. At present an exceedingly rare visitant during the migrations. Formerly they were regular and rather common migrants. Still migrate along the Mississippi River.

Family **GRACULIDÆ.**

Genus **Graculus** *Linn.*

290. G. dilophus var. **dilophus** *Sw.* DOUBLE-CRESTED COR-

MORANT. A regular but rather uncommon migrant and sometimes a winter resident.

290 *a*. Var. **floridanus** *Aud.* FLORIDA CORMORANT. A regular summer resident in Southern Illinois, occasionally straying to the northern portion of the state. A specimen of this variety was observed in May, 1876, at Waukegan. I do not think *G. carbo* occurs in this vicinity.

Family LARIDÆ.

Genus Stercorarius *Briss.*

291. S. pomatorhinus *Vieill.* POMARINE JAEGER. A rare winter visitant to Lake Michigan. It was first observed by Mr. F. L. Rice near Evanston and upon the strength of this introduced to the fauna of the state. I am happy to record a second instance of its occurrence near Chicago, October 9th, 1876, when I observed a fine adult specimen flying along the Lake shore, and so near that there could be no possibility of mistake.

Genus Larus *Linn.*

292. L. glaucus *Brünn.* GLAUCUS GULL. A rather rare winter visitant to Lake Michigan. Dr. Hoy has killed three specimens upon the Lake near Racine, one of which is now preserved in his collection. He has seen others during severe winters.

293. L. leucopterus *Fabr.* WHITE-WINGED GULL. A regular and not uncommon winter resident on Lake Michigan.

294. L. marinus *Linn.* GREAT BLACK-BACKED GULL. Not an uncommon winter resident upon Lake Michigan. The immature young are greatly in excess of the adults.

295. L. argentatus var. **argentatus** *Brünn.* EUROPEAN HERRING GULL. Very rare winter visitant to the Lake. A single specimen, an adult female, was obtained in the Chicago Harbor March 27, 1876. Dr. Coues records two other specimens of this form obtained in this country, one in Mr. Lawrence's private cabinet and the other in the Cambridge Museum (see B. of N. W., p. 628). The Illinois specimen has been examined by Dr. Coues and Mr. Ridgway and pronounced by them to be identical with the European bird. The most striking peculiarity is its small size and the white terminal space over two inches long, upon the outer primary. The dimensions of my specimen are as follows: length, 22·50; wing, 15·80; tarsus, 2·25; bill, 1·90. Iris hazel.

295 *a*. Var. **smithsonianus** *Coues.* AMERICAN HERRING GULL. Very abundant winter resident upon Lake Michigan, and occurs throughout the state. Large numbers frequent the prairie near the slaughter houses, in the vicinity of Chicago, where they find a generous supply of offal. Arrives from the north during October, and the adults, with the greater portion of the young, move north the middle of April. I do not think that the young breed until they don the perfectly adult plumage, for, in June, 1876, I found a large flock consisting of about two hundred immature gulls, nearly all of this species, upon the Lake shore near Waukegan, and upon making inquiries learned that each year about the same number were in the habit of remaining at this place through the summer. The flock contained birds in every stage of plumage between the last year's young and the adult birds, of which a few were present. The large number of fishing nets set at Waukegan explained their preference for that locality. A colony of these birds breed on an island in the channel between Lake Michigan and Green Bay, and many others at various places on Lake Superior.

296. L. delewarensis *Ord.* RING-BILLED GULL. Common migrant along the Lake. Very rarely remains through the winter. Most common with us September 20th to November 30th, and March 20th to the first of May. A few young of this species were, with the flock of young herring gulls, observed at Waukegan in June.

297. L. tridactylus *Linn.* COMMON KITTIWAKE GULL. A rare winter visitant to Lake Michigan. Dr. Hoy writes that in the winter of 1870 a single specimen of this species kept about the harbor for several days, but was too shy to be shot. He is quite certain of his identification, as he examined the bird carefully with a large field glass, while it was standing upon a piece of ice just out of gun shot.

298. L. atricilla (*Linn.*). LAUGHING GULL. "Summer visitant" (Ridgway). I give this species entirely upon the strength of its occurrence in Mr. Ridgway's Catalogue (Ann. N. Y. Lyc. N. H., Jan., 1874).

299. L. franklini *Rich.* FRANKLIN'S GULL. A rare visitant to Lake Michigan. A specimen was obtained at Milwaukee in 1850, and is preserved in a collection at that place (Hoy). This species undoubtedly is of more or less regular occurrence during the migrations in company with the immense numbers of *L. philadelphia* which pass along the Lake to their breeding grounds.

300. L. philadelphia *Ord.* BONAPARTE'S GULL. Exceedingly abundant migrant. Arrives in large numbers, and usually in full breeding dress, the 5th to 10th of April, and the majority, after lingering along the shore a few weeks, pass north to their summer resorts, during the first two weeks of May. Returning the last of August, while resuming the winter dress, they remain more or less abundant until well into November. In very mild winters a few remain during the season. As is the case with the herring gull, many of the young of this species do not proceed north, but remain along the Lake during the breeding season. Instead of remaining about sand bars, however, they prefer the fishermen's stakes out half a mile or more from shore, and it is rarely that they cannot be found at such places during the summer months. The autumn moult occurs the last of August.

Genus **Xema** *Leach.*

301. X. sabinei *Bonap.* Fork-tailed Gull. Exceedingly rare visitant to Lake Michigan. While collecting on the Lake shore near Chicago, the first of April, 1873, I saw a specimen of this bird in a small pool of water on the beach. At first I supposed it was a Bonaparte gull, and was about passing it, when it arose, and as it passed toward the Lake I saw it was something new to me, and fired. It flew a few rods and fell into the Lake about thirty yards from shore. It was in perfect breeding dress, as was shown by the black markings on the head, each time it was raised while struggling in the water. A gale from off shore soon drifted it from sight.

Genus **Sterna** *Linn.*

302. S. anglica *Mont.* Gull-billed Tern. An exceedingly rare visitant during summer.

303. S. caspia *Pall.* Caspian Tern. An irregular but not uncommon visitant during the migrations and in winter upon Lake Michigan. The 9th of June, 1876, I saw a fine specimen fishing along the Lake shore, at Waukegan. Its occurrence so late is very unusual. Dr. Bannister has frequently observed it at Evanston in winter.

304. S. regia *Gamb.* Royal Tern. An exceedingly rare summer visitant to Lake Michigan. A specimen was taken at Milwaukee many years since and preserved in a museum there (Hoy).

305. S. hirundo *Linn.* Wilson's Tern. Very abundant migrant. From April 28th to May 10th, and the middle of October, are the times of the greatest abundance of this species. A few still breed on small islands at the northern end of the Lake, where they once nested in abundance. I have never observed it here during the breeding season.

306. S. forsteri *Nutt.* Forster's Tern. Migrates with the preceding, but in less abundance. Rather common summer resident in this portion of the state. Breeds in the numerous small, reedy lakes. The young fly about the middle of July.

On page 679, "Birds of the North-west," Dr. Coues states that "in the interior" *forsteri* "almost replaces *hirundo*, being, in fact, the most characteristic species." This is the case during the breeding season, as *hirundo* seeks the larger and more open bodies of water, and *forsteri* prefers the small lakes and reedy streams. During the migrations, however, the hosts of *hirundo* moving to or from their northern breeding places greatly outnumber *forsteri*.

The above is true of Illinois, and will, I think, apply equally well to other points in the Mississippi valley, where the two forms occur. This and the preceding are in breeding plumage when they arrive in spring. White feathers commence to replace the black cap early in August in *forsteri*. Although I have been aware that *S. forsteri* nested in this vicinity for several years, it was not until the middle of June, 1876, that I had the pleasure of examining one of their nests. While we were collecting eggs among the wild rice patches, on Grass Lake, June 14th, Mr. Douglas observed a pair of these terns hovering near a small patch of *Saggitaria* leaves growing in several feet of water, and rowing to the spot found the nest, which was a loosely built structure of coarse pieces of reeds resting upon a mass of floating plants and concealed from view by the surrounding leaves. Upon the side of the nest was a single young bird, about to scramble into the water, but upon seeing Mr. Douglas it crouched to avoid being observed, and was captured. A thorough search at the time failed to reveal any other young ones, so the adults, which had been darting and screaming about his head, were secured, with a second pair which had espoused the cause of their companions. Their anxiety we afterwards found to be the proximity of an unfinished nest, similarly situated. That evening we found and secured two more young upon the nest found in the morning. The next morning fortune favored me, and, while passing between several floating masses of decaying vegetable matter I observed four small heaps of wild rice stalks resting upon one of these masses, and on a nearer view, to my delight they proved to be the desired nests containing eggs. The nests were situated in a line, and the two outer ones were not over twenty-five feet apart. The only materials used were pieces of wild rice stems, which were obviously brought from some distance, as the nearest patch of rice was several rods distant. The nests were quite bulky, the bases being two feet or more in diameter. The greatest depth was about eight inches, and the depression in the centre so deep that while sitting in the boat a rod away the eggs were not visible. Two of the nests contained three eggs, and two contained two eggs, each. The following are the measurements of three of the eggs, representing the amount of variation: 1·70 by 1·25; 1·75 by 1·20 and 1·68 by 1·25. The ground color varies from a pale greenish to a warm brownish drab. The spots and shell markings are of a varying shade of brown, distributed much as in the other small tern's eggs.

While near the nests the birds were circling high overhead, now and then uttering a harsh cry, but, concealing myself in the rice near by, I soon secured several of the parent birds as they flew about the nests, uttering angry cries at the spoliation of their treasures. After the first bird fell into the water, the others showed the usual sympathy of their kind, but as the third or fourth specimen was killed, the remainder cautiously withdrew and uttered their complaints at a safer distance. Several other pairs were nesting on the Lake at this time, but we were unable to find their nests.

308. S. superciliaris *Vieill.* LEAST TERN. A very rare summer visitant in this vicinity. A fine male specimen is in the collection of the Chicago Academy of Sciences, obtained June 11, 1876, upon the Calumet Marshes..

Genus **Hydrochelidon** *Boie.*

309. H. lariformis *Coues.* SHORT-TAILED TERN. Exceedingly abundant summer resident upon all the large marshes and prairie sloughs. Arrives the first of May and remains until the first of September, after which but few are to be found. I have taken freshly laid eggs from May 25th to June 18th. The middle of June I have taken specimens in perfect winter dress, although this is unusually early. Generally a few white feathers begin to appear near the base of the bill about this time, and by the first week of July an endless series may be seen between the perfect breeding to the perfect winter plumage. By the middle of July specimens in which the black predominates are rare. This bird frequents almost exclusively reedy streams and marshy situations, and is never found upon Lake Michigan except during the migrations, when a few specimens may be seen with the flocks of the larger terns.

The following notes upon the breeding habits of this species comprise my observations during the last two seasons, during which time I have examined between two and three hundred nests. In nearly every instance the eggs were deposited in a well-built nest formed of the surrounding material. In prairie sloughs the nests are generally located well out from shore, in from one to two and one-half feet of water, and in the midst of the fine wiry grass growing in such places. In such situations the nests are formed of a mass of the surrounding grass, consisting of both living blades and the dead straws floating in the water. These are heaped into a conical mass, upon the apex of which, resting but an inch or two above the surface of the water, the eggs were placed. As would be supposed these structures were often quite bulky. In one instance I collected all the eggs deposited in a small prairie slough, and upon visiting the place about a week later, found the birds had built smaller nests in shallow water, and deposited a second set of eggs. These were removed, and upon a third visit I found many of the birds were nesting upon the masses of dead weeds or upon old muskrat houses. The sets taken from the above nests averaged as follows: first, three eggs; second, two eggs; third, one egg. When the nests are built upon a small lake, where the water is too deep for their nest to rest upon the bottom, they generally build a slight nest of grass stems upon a floating bog, mass of dead reeds or old muskrat houses, but a well built nest will be found in nine cases out of ten. Early in May, when farmers are ploughing near a place frequented by these terns, they often follow behind the plough and pick up the earth-worms and larvæ exposed.

An unfledged young one, which I once took home became very familiar in a few hours, and would come, upon being called by a squeaking noise, and take a fly from my fingers. It was also quite expert at capturing flies upon the floor, but it was some time before it learned to distinguish between a fragment of dirt or a nail head and the insect. Although but little over a week old it could run rapidly from place to place and appeared quite contented with its change of quarters, and but for an unfortunate accident which caused its death would, I think, have been easily raised.

Family COLYMBIDÆ.

Genus Colymbus *Linn.*

309. C. torquatus *Brünn.* LOON. Very common winter resident upon Lake Michigan. Formerly nested commonly among the small lakes in this portion of the state, but now it is of uncommon occurrence during summer.

310. C. arcticus *Linn.* BLACK-THROATED LOON. A very rare winter visitant upon Lake Michigan. There is a specimen in Dr. Hoy's collection, taken at Racine, and a second specimen was captured and preserved at Milwaukee.

311. C. septentrionalis *Linn.* RED-THROATED LOON. Very common winter resident upon Lake Michigan. Arrives late in autumn and leaves early in spring.

Family PODICIPIDÆ.

Genus Podiceps *Lath.*

312. P. cristatus *Linn.* CRESTED GREBE. Rather common upon Lake Michigan in winter. Although Mr. Ridgway states (he informs me on Mr. Kennicott's authority) that it is resident in the northern portion of the state, I have yet to see one during the summer.

313. P. griseigena var. **holbolli** *Reinh.* RED-NECKED GREBE. Rather uncommon winter resident upon Lake Michigan.

314. P. cornutus *Lath.* HORNED GREBE. Next to the Carolina Grebe, our most abundant species. Occurs commonly during the migrations; the first of October to November 10th, and during April. Breeds sparingly in the small lakes.

315. P. auritus var. **californicus** *Lawr.* EARED GREBE. Not uncommon in winter upon Lake Michigan. Several species of grebes and a number of ducks are occasionally taken during the winter upon the hooks, set several miles off shore by the fishermen.

Genus **Podilymbus** *Less.*

316. P. podiceps *Linn.* CAROLINA GREBE. Very common summer resident. Arrives in April and remains until the first of November. Nests along the borders of reedy sloughs, marshes and rivers.

SPECIES NOT GIVEN IN THE PRECEDING LIST WHICH ARE KNOWN TO OCCUR IN ILLINOIS.

1. *Peucæa æstivalis.* Common, locally, in Wabash, Richland, and adjoining counties.

2. *Guiraca cærulea.* Rare in the southern half of the state.

3. *Cyanospiza ciris.* Seen in Wabash Co. in June (*Ridgway*).

4. *Caprimulgus carolinensis.* Wabash Co. (*Ridgway*).

5. *Campephilus principalis.*

6. *Falco lanarius* var. *polyagrus.* Wabash and Lawrence counties (*Ridgway*) and Rock Island (*Sargent*).

7. *Elanus leucurus.* Wabash Co. (*Ridgway*).

8. *Ictinia mississippiensis.* Abundant summer resident in the southern portion of the state. Probably occurs in Northern Illinois.

9. *Buteo nitida* var. *plagiata.*

10. *Archibuteo ferrugineus.* Under date of November 13, 1876, Mr. Ridgway writes me that while returning from the West the present autumn, Dr. Coues observed this species entirely across the Great Plains, and also on the prairies of Illinois, while on the Illinois side of the Mississippi, at Rock Island, it was still common.[3]

11. *Cathartistes atratus.*

12. *Ardea wurdemanni.* Mr. Ridgway states that while at Mt. Carmel, Wabash Co., September 11 to 22, 1876, he found several of these birds along the Wabash River near that place, and that one was severely wounded, but escaped.

13. *A. rufa.* Not uncommon near Cairo in August.

14. *A. cærulea.* Excessively numerous near Cairo in August.

15. *Nyctherodias violaceus.* Breeds at least as far north as Wabash Co.

16. *Plotus anhinga.* Common in summer near Cairo, and seen by Mr. Ridgway near Mt. Carmel.

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[3] See also Bull. Nutt. Orn. Club, Vol. II, p. 26.

LIST OF SPECIES WHICH BREED IN NORTH-EASTERN ILLINOIS.

1. *Turdus mustelinus.*
2. " *fuscescens.*
3. " *swainsoni.*
4. " *migratorius.*
5. *Harporhynchus rufus.*
6. *Mimus polyglottus.*
7. *Galeoscoptes carolinensis.*
8. *Sialia sialis.*
9. *Polioptila cærulea.*
10. *Parus atricapillus.*
11. *Sitta carolinensis.*
12. " *canadensis.*
13. *Thryothorus ludovicianus.*
14. " *bewicki.*
15. *Troglodytes aëdon.*
16. *Cistothorus stellaris.*
17. " *palustris.*
18. *Mniotilta varia.*
19. *Helminthophaga chrysoptera.*
20. " *ruficapilla.*
21. *Parula americana.*
22. *Dendrœca æstiva.*
23. " *cærulea.*
24. " *pennsylvanica.*
25. " *virens.*
26. " *pinus.*
27. *Siurus aurocapillus.*
28. " *noveboracensis.*
29. " *ludovicianus.*
30. *Geothlypis trichas.*
31. *Myiodioctes mitratus.*
32. " *canadensis.*
33. *Setophaga ruticilla.*
34. *Progne subis.*
35. *Petrochelidon lunifrons.*
36. *Hirundo horreorum.*
37. " *bicolor.*
38. *Stelgidopteryx serripennis?*
39. *Cotyle riparia.*
40. *Vireo olivaceus.*
41. " *philadelphicus.*
42. " *gilvus.*
43. " *flavifrons.*
44. " *noveboracensis.*
45. " *belli.*
46. *Ampelis cedrorum.*
47. *Collurio borealis??*
48. " *ludovicianus.*
49. " var. *excubitoroides.*
50. *Pyranga rubra.*
51. *Carpodacus pupureus.*
52. *Chrysomitris tristis.*
53. " *pinus.*
54. *Pyrgita domestica.*
55. *Passerculus savanna.*
56. *Poocætes gramineus.*
57. *Ammodromus henslowi.*
58. " *passerinus.*
59. " var. *nelsoni.*
60. *Chondestes grammaca.*
61. *Zonotrichia albicollis.*
62. *Spizella pusilla.*
63. " *socialis.*
64. " *pallida.*
65. *Melospiza melodea.*
66. " *lincolni.*
67. " *palustris.*
68. *Euspiza americana.*
69. *Hedymeles ludovicianus.*
70. *Cyanospiza cyanea.*
71. *Cardinalis virginianus.*
72. *Pipilo erythrophthalmus.*
73. *Eremophila alpestris.*
74. *Dolichonyx oryzivorus.*
75. *Molothrus pecoris.*
76. *Agelæus phœniceus.*
77. *Zantho. icterocephalus.*
78. *Sturnella magna.*
79. " var. *neglecta.*
80. *Icterus spurius.*
81. " *baltimore.*
82. *Quiscalus* var. *æneus.*
83. *Corvus americanus.*
84. *Cyanura cristata.*
85. *Tyrannus carolinensis.*
86. *Myiarchus crinitus.*
87. *Sayornis fuscus.*
88. *Contopus borealis?*
89. " *virens.*
90. *Empidonax* var. *traills.*
91. " *minimus.*
92. " *acadicus.*
93. " *flaviventris.*
94. *Ceryle alcyon.*
95. *Chordiles popetue.*
96. " var. *henryi.*
97. *Antrostomus vociferus.*
98. *Chætura pelagica.*
99. *Trochilus colubris.*
100. *Coccygus americanus.*
101. " *erythrophthalmus.*
102. *Picus villosus.*

103. *Picus pubescens.*
104. *Centurus carolinus.*
105. *Melanerpes erythrocephalus.*
106. *Colaptes auratus.*
107. *Otus* var. *wilsonianus.*
108. “ *brachyotus.*
109. *Nyctale acadica?*
110. *Scops asio.*
111. *Bubo virginianus.*
112. *Falco communis* var. *anatum.*
113. “ var. *columbarius.*
114. “ *sparverius.*
115. *Circus* var. *hudsonius?*
116. *Nisus fuscus.*
117. “ *cooperi.*
118. *Buteo pennsylvanica.*
119. “ *swainsoni.*
120. “ *lineatus.*
121. “ *borealis.*
122. *Aquila* var. *canadensis.*
123. *Haliætus leucocephalus.*
124. *Ectopistes migratoria.*
125. *Zenædura carolinensis.*
126. *Pediœcetes phasianellus.*
127. *Cupidonia cupido.*
128. *Bonasa umbellus.*
129. *Ortyx virginianus.*
130. *Squatarola helvetica.*
131. *Ægialitis vociferus.*
132. “ *semipalmatus.*
133. “ *melodus.*
134. *Steganopus wilsoni.*
135. *Philohela minor.*
136. *Gallinago wilsoni.*
137. *Tringa minutilla.*
138. “ *maculata.*
139. *Totanus semipalmatus.*
140. “ *melanoleucus.*
141. “ *flavipes.*
142. *Totanus solitarius.*
143. *Tringoides macularius.*
144. *Actiturus bartramius.*
145. *Numenius longirostris.*
146. *Ardea herodias.*
147. “ *egretta.*
148. “ *virescens.*
149. *Nyctiardea* var. *nævia.*
150. *Botaurus minor.*
151. *Ardetta exilis.*
152. *Grus americanus.*
153. “ *canadensis.*
154. *Rallus elegans.*
155. “ *virginianus.*
156. “ *carolina.*
157. “ *noveboracensis.*
158. “ *jamaicensis.*
159. *Gallinula galeata.*
160. *Fulica americana.*
161. *Branta canadensis.*
162. *Anas boschas.*
163. “ *obscura.*
164. *Dafila acuta.*
165. *Chaulelasmus streperus.*
166. *Mareca americana.*
167. *Querquedula carolinensis.*
168. “ *discors.*
169. *Spatula clypeata.*
170. *Aix sponsa.*
171. *Fulix affinis.*
172. “ *collaris.*
173. *Erismatura rubida.*
174. *Mergus serrator.*
175. “ *cucullatus.*
176. *Sterna forsteri.*
177. *Hydrochelidon lariformis.*
178. *Colymbus torquatus.*
179. *Podiceps cornutus.*
180. *Podilymbus podiceps.*

SPECIES WHICH OCCUR IN SUMMER, BUT ARE NOT KNOWN TO BREED.

1. *Protonotaria citrea.*
2. *Helmitherus vermivorus.*
3. *Dendrœca* var. *albilora.*
4. “ *discolor.*
5. *Oporornis formosus.*
6. *Pyranga æstiva.*
6*a*. *Hylotomus pileatus.*
7. *Conurus carolinensis.*
8. *Strix* var. *pratincola.*
9. *Syrnium nebulosum.*
10. *Nauclerus forficatus.*
11. *Buteo* var. *calurus.*
12. *Rhynogryphus aura.*
13. *Meleagris gallopavo.*
14. *Ereunetes pusillus.*
14*a*. *Tantalus loculator.*
15. *Ardea candidissima.*
16. *Porphyrio martinica.*
17. *Graculus* var. *floridanus.*
18. *Larus* var. *smithsonianus.*
19. “ *delawarensis.*
20. “ *atricilla?*
21. “ *philadelphia.*
22. *Sterna anglica.*
23. “ *regia.*
24. “ *superciliaris.*

SPECIES WHICH OCCUR ONLY DURING THE MIGRATIONS.

1. *Turdus aliciæ.*
2. " *pallasi.*
3. *Sialia arctica.*
4. *Regulus satrapa.*
5. " *calendula.*
6. *Troglodytes* var. *hyemalis.*
7. *Anthus ludovicianus.*
8. *Helminthophaga celata.*
9. " *peregrina.*
10. *Perissoglossa tigrina.*
11. *Dendrœca coronata.*
12. " *maculosa.*
13. " *blackburniæ.*
14. " *striata.*
15. " *castanea.*
16. " *cœrulescens.*
17. " *palmarum.*
18. *Oporornis agilis.*
19. *Geothlypis philadelphia.*
20. *Myiodioctes pusillus.*
21. *Vireo solitarius.*
22. *Ammodromus lecontei.*
23. *Zonotrichia leucophrys.*
24. " var. *intermedia.*
25. " *coronata.*
26. " *querulea.*
27. *Junco hyemalis.*
28. *Passerella iliaca.*
29. *Scolecophagus ferrugineus.*
30. " *cyanocephalus.*
31. *Sayornis sayus.*
32. *Sphyropicus varius.*
33. *Pandion* var. *carolinensis.*
34. *Charadrius fulvus* var. *virginicus.*
35. *Strepsilas interpres.*
36. *Recurvirostra americana.*
37. *Himantopus nigricollis.*
38. *Lobipes hyperboreus.*
39. *Phalaropus fulicarius.*
40. *Macrorhamphus griseus.*
41. *Micropalma himantopus.*
42. *Tringa bairdi.*
43. " *bonapartei.*
44. " *maritima.*
45. " var. *americana.*
46. " *canutus.*
47. *Calidris arenaria.*
48. *Limosa fedoa.*
49. " *hudsonica.*
50. *Tringites rufescens.*
51. *Numenius hudsonicus.*
52. " *borealis.*
53. *Ibis falcinellus.*
54. *Cygnus buccinator.*
55. " *americanus.*
56. *Anser* var. *gambeli.*
57. " *cœrulescens.*
58. " *hyperboreus.*
59. " var. *albatus.*
60. *Branta bernicla.*
61. " *canadensis* var. *hutchinsi.*
62. *Mareca penelope.*
63. *Fuligula marila.*
64. " *vallisneria.*
65. " var. *americana.*
66. *Pelecanus trachyrhynchus.*
67. *Graculus dilophus.*
68. *Xema sabinei.*
69. *Sterna hirundo.*

LIST OF WINTER VISITANTS AND RESIDENTS.

1. *Myiadestes townsendi.*[3]
2. *Lophophanes bicolor.*[4]
3. *Parus hudsonicus.*
4. *Certhia familiaris.*
5. *Ampelis garrulus.*
6. *Collurio borealis.*
7. *Hesperiphona vespertina.*
8. *Pinicola enucleator.*
8*a*. *Carpodacus pupureus.*
9. *Chrysomitris tristis.*[5]
10. *Chrysomitris pinus.*
11. *Loxia leucoptera.*
12. " *americana.*
13. *Ægiothus linarius.*
14. " *canescens.*
15. *Plectrophanes nivalis.*
16. " *lapponicus.*
17. " *pictus.*
18. *Pyrgita domestica.*[5]
19. *Junco hyemalis.*

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[3] Straggler. [4] Visitant from the south.

20. *Spizella monticola.*
21. *Eremophila alpestris.*
22. *Corvus* var. *carnivorus.*
23. " *americanus.*[5]
24. *Pica* var. *hudsonica.*
25. *Cyanura cristata.*[5]
26. *Perisoreus canadensis.*
27. *Picus villosus.*[5]
28. " *pubescens.*[5]
29. *Picoides arcticus.*
30. *Melanerpes erythrocephalus.*[5]
31. *Strix flammea.*
32. *Otus* var. *wilsonianus.*[5]
33. " *brachyotus.*[5]
34. *Syrinum cinereum.*
35. *Scops asio.*[5]
36. *Bubo virginianus.*[5]
37. *Nyctea* var. *arctica.*
38. *Surnia* var. *hudsonica.*
39. *Astur* var. *atricapillus.*
40. *Buteo borealis.*[5]
41. *Aquila canadensis.*
42. *Haliætus leucocephalus.*[5]
43. *Pediœcetes phasianellus.*[5]
44. *Cupidonia cupido.*[5]
45. *Bonasa umbellus.*[5]
46. *Lagopus albus.*
47. *Ortyx virginianus.*[5]
48. *Fuligula marila.*
49. *Fuligula affinis.*[5]
50. " *collaris.*[5]
51. *Bucephala clangula.*
52. " *islandica.*
53. " *albeola.*
54. *Harelda glacialis.*
55. *Histrionicus torquatus.*
56. *Somateria mollissima.*
57. " *spectabilis.*
58. *Œdemia americana.*
59. " *fusca.*
60. " *perspicillata.*
61. *Mergus merganser.*
62. " *serrator.*[5]
63. " *cucullatus.*[5]
64. *Stercorarius pomatorhinus.*
65. *Larus glaucus.*
66. " *leucopterus.*
67. " *marinus.*
68. " *argentatus.*[4]
69. " *tridactylus.*
70. *Sterna caspia.*
71. *Colymbus torquatus.*[5]
72. " *septentrionalis.*
73. " *arcticus.*
74. *Podiceps cristatus.*
75. " var. *holbolli.*
76. " var. *californicus.*

MONDAY, DECEMBER 11, 1876.

C. PFOUNDES, an English gentleman who has spent thirteen years in Japan, in the British Official Service, gave a familiar talk on

JAPAN AND THE JAPANESE.

Around the room were arranged a great variety of Japanese photographs, and colored pictures were exhibited and explained in illustration of the speaker's remarks. The photographs were exceedingly fine ones, and the pictures were mostly cartoons, many of them of political significance.

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[5] Also in summer.
[4] Young in summer.

The lecturer remarked that Oriental life is surrounded by such a halo of mystery, fiction, and travellers' twice told tales, that a true picture has been rarely given by the travellers or stock book-makers. A very large amount of printed material relating to Japan exists, but the bulk of the later works are simply reprints or compilations from previous ones.

The residents, as a rule, in far distant lands, rarely enter very deeply into the language and literature of the people among whom their lot is cast. It is like having to cross unknown lands to reach a far distant mountain; the beauties of the extended view are as yet unknown. The ignorance and jealousy of the natives form an almost insurmountable difficulty to the foreigners trying to gain an insight into the inner life of the people.

The lecturer alluded to the charm and attraction to those who persevered in the exploration of these grand hitherto untrodden fields, for the toilsome journey is frequently relieved by rays of poetic beauty, glimpses of artistic design, brilliant and grotesque coloring, interesting legend, and sketches that show a deep knowledge of human nature, and of astute and refined capabilities. Quaint humor, terse proverbs, ready wit, are found. When the meanings of conventional allusions and frequently occurring sketches are met with, the study is most attractive, and the literature and art are appreciated.

Japan since the days of Marco Polo was from time to time brought before the world by attempts to reach its fabled shores. The age of adventure started by Polo's book was followed by one of discovery. All these attempts at discovery were surpassed by that of Columbus, who, in trying to find the Zipanga of Polo, reached this continent.

The lecturer said he should present some points on subjects away from the beaten path. He alluded to the Japanese collection at Philadelphia, and said it was by no means a good exhibit of Japanese art. The officers were most anxious to exhibit the progress made in foreign science, but the Japanese traders, who were permitted to monopolize the space allotted, took advantage to display what they considered the most salable wares.

The generally received accounts that foreigners first arrived in Japan in 1542 is not correct. I have discovered in some Japanese works that foreigners arrived there in 1529–30. They mention the arrival of *black ships*, and that the captain of these black ships gave the prince called Otomo Sorian, lord of Tanega Shima, two "pieces of fire arms." The Spaniards in trying to cross the main must have been from time to time carried on to the shores of Japan. We find accounts of curious people landing on the coast and behaving themselves strangely. There is no doubt that the foreigners who landed there have influenced the arts of the people.

From 1530 to 1630 foreigners flocked into the country in large numbers; first Spaniards and Portuguese, then the Dutch and then the English. These were confined to Nagasaki. At this time the foreigners intermarried with the natives to a large extent.

Sketches were exhibited of the island Pappenburg, from which the foreigners are said to have been thrown into the sea.

After Perry's expedition to Japan hardly a season has passed when there has not been a book written on Japan. Kœmpfer's old book is the best we have. He had to work under great difficulty. All subsequent authors have followed his method. I have dared to strike out into new fields.

A new book was lately published by Harpers called

"The Mikado's Empire." Jarvis has published quite a work, taking as his basis the Hoku-sai illustrated art works. These works give some idea of the depth of feeling of the artist. All these curious sketches and illustrations have a meaning, though not apparent to us.

The Japanese have learned to copy our way of making cheap ware with peculiar legendary ornamentation. Old lacquer objects are the bridal outfits of the daughters of the nobles of Japan.

Previous to 2300 years ago the Japanese writers treated of mythological subjects, personification, etc., and several specimens of these curious old legends were translated by the lecturer and rehearsed to the audience. The lecturer then gave the meaning of some of the old legends, as about the sun goddess being on one occasion angry with the gods. She hid herself in a cavern, and the gods sent for dancers, etc. Female curiosity tempted her to peep in through the chinks and she was caught and drawn forth by the strong armed god. Of such incidents are these legends made up.

The next relates how the wicked step-brother was compelled to slay the monsters. He heard weeping and found a very ancient man and woman in distress because their only grandchild was to be sacrificed. Proposing to rescue her from the monster he procures some *saki*, and places it in a tub. The monster, dipping each of his heads into the tub, becomes tipsy. He then cuts the monster to pieces all but the tail, which he preserves and finds to be a wonderful charmed weapon. He takes the maiden away and builds her a hut, etc., etc. Afterwards he composes the poem which is the oldest Japanese poem. It is in thirty-one syllables, a line of five, one of seven, one of five and two of seven.

The son of one of the Emperors was sent to subdue one of the provinces. His wife accompanied him. During a storm the faithful woman jumped into the boiling waters. His whole army was saved that it might punish the barbarians. The disconsolate husband cries, *Ah! tsuma koishi:*—O my dear wife, how I grieve for you! Next the legend of a beautiful lady who escaped during the troublous times with her children. One of these children afterwards became the Shogoun Yoritomo, the founder of Kamabura, in about 1190 to 1210 (A. D.). This gave rise to a number of old stories.

Another legend refers to a demon who haunted the palace of the Mikado.

These legends are fruitful sources of song and story in Japan, and all the characters on fans, screens, and pictures have a meaning. Fans are very much used for representations of scenes and other objects. In Japan they are used for advertisements. Nine-tenths of them are intended to advertise restaurant and theatrical resorts, with representations of noted dancing girls. Sometimes on the fans are views of places to attract sight-seers and tourists.

All Japanese decorations have a meaning, either mythological, legendary, historical, symbolic, or proverbial. One common sketch represents a man slaying a remarkable animal, a symbol of difficulties overcome. A fabulous animal is a decoration for imperial robes. Every animal, bird, and tree, and their relations to each other, their combinations, have their own peculiar meaning. A pine tree represents good wishes. A swallow represents return, as "When the swallows homeward fly." And so a cherry tree and pheasant, a bird flying to the plum tree, the bamboo and tiger, and the wild boar, have each their symbolic meanings. They have caricatures of men all eyes, all ears, or all legs, figurative of those who see too much, hear too much, or can only run away. Their proverbs are very apt, as instances cited showed.

The Japanese are beginning to imitate foreign customs and to think more of the companionship of their wives. It was not until recently that husbands walked out with their wives. The man walked with friends of his own sex, and the woman with hers.

The lecturer then described the formal way and the elaborate ceremonies with which the Japanese receive a visitor, and gave an amusing account of a call he made on a Prince in 1866. The host received him on his hands and knees, and the guest followed his example. They rose together, and the host apologized for the poor reception. Many curious details were given. The call was made to examine the Prince's collection of pictures. The Japanese does not display his pictures on the walls of his room, but keeps them in a store-house outside, calls a servant, who summons a retainer, who is directed to go to a certain place and bring such a package from such a spot. The pictures are brought in one by one in little boxes and hung up for view. A collection of swords was also exhibited in the same way. It is therefore quite a labor to see any little collection in a gentleman's house.

Mr. Pfoundes then explained the meanings of the various works of art hung about the lecture room; the significance of the objects represented in the cartoons; the trees, flowers, etc. He referred to the prevalent superstitions of the people, their belief in spirit rappings, witchcraft, etc. The *mediums* are very poor people, and are recognized by the hats they wear. They carry continually a box supposed to contain the head of a dog. Some spirit has entered into this dog and becomes the medium of communication between the two worlds. The mediums were very unwilling to show me any of their performances, for fear, I suppose, I should expose them and spoil their business.

He stated that lovers sometimes commit suicide together, and mentioned that he once saw the bodies of a girl and her lover, tied together with her girdle, floating down the river. She had filled her sleeves with stones so that they might sink.

A great many interesting facts were narrated, and a brief and graphic account of the manner of life in Japan was given. At the conclusion of the lecture Capt. Pfoundes invited the audience to propound any questions on particular points, which they desired to have answered, and some time was pleasantly and profitably spent in this manner.

◆

REGULAR MEETING, MONDAY, DECEMBER 18, 1876.

MEETING this evening at 7.30 o'clock. Adjourned to Friday the 22nd.

◆

ADJOURNED MEETING, FRIDAY, DECEMBER 22, 1876.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair.

Mr. WILLIAM P. UPHAM read a communication entitled "History of Stenography, with a proposal for a new System of Phonetic Short-hand Writing;" illustrating the same with diagrams and drawings on the black-board.

This communication was referred to the Publication Committee.

John P. Peabody, of Salem, was elected a resident member.

[illegible]